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BOARD OF NATURAL RESOURCES & CONSERVATION

COLSTRIP 3 & 4 HEARINGS

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STATE OF MONTANA
BEFORE THE BOARD OF
NATURAL RESOURCES AND CONSERVATION

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IN THE MATTER OF THE PUBLIC HEARING ON WAIVERS AND THE APPLICATION FOR CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED FOR THE PROPOSED COLSTRIP PROJECT, UNITS 3 & 4, WHEREIN THE APPLICANTS FOR SAID WAIVERS AND APPLICATION ARE PUGET SOUND POWER & LIGHT COMPANY, PORTLAND GENERAL ELECTRIC COMPANY, WASHINGTON WATER POWER COMPANY, PACIFIC POWER & LIGHT COMPANY, AND THE MONTANA POWER COMPANY.

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WEDNESDAY, MAY 19, 1976

The hearing reconvened at 9:10 o'clock A.M. on Wednesday, May 19, 1976, before the Board of Natural Resources and Conservation of the State of Montana, in the Montana Senate Chambers, State Capitol, Helena, Montana, for the purpose of hearing final arguments on the case.

Members of the Board of Natural Resources and Conservation present and sitting:

Joseph W. Sabol, Chairman
David G. Drum
William H. Bertsche
Mrs. J. Viola Herak
Cecil Weeding
Dr. Wilson F. Clark
Dean Hanson

comprising the full Board.

Carl W. Davis, Hearings Examiner, presided over the proceedings.

MR. DAVIS: This is the time set for hearing the final summations in the Colstrip 3 and 4 hearings. I guess an order's been filed affixing the time; I think everyone understands what the time parameters are. If there are any questions asked by any members of the Board, whoever is fielding the question, for instance, if the applicants will field the question at that time, then if the other parties have comments or want to respond, they should make a note of it and do it on their own time. That way we won't break up the time discussing the topic in answer to a question, if that's agreeable. So, if the parties are ready to proceed, we'll proceed with the applicants at 9:10 starting time. Mr. Ross?

ARGUMENTS

BY APPLICANTS

By Mr. John Ross
Attorney for the Applicants

MR. ROSS: Members of the Board of Natural Resources, we thank you for this opportunity to appear before you. For three long and very difficult years, Colstrip 3 and 4 have gone through countless meetings and have produced files and files of paper and have been bedeviled by legal maneuvering and obstruction. As we near this day of decision, my purpose today is to put Colstrip 3 and 4 in proper perspective and to briefly outline the presentation of our argument this morning.

I don't think it should be overlooked that the Utility Siting Act in Section 70-802 recognizes that construction of additional power facilities such as Colstrip 3 and 4 may be necessary to meet the increasing need for electricity, and that such facilities have an effect on the environment and welfare of the citizens of Montana, and therefore such facilities must be built to comply with certain objective criteria set forth in the siting act.

But the siting act should not be used as exemplified by the opponents' conduct and position as a de facto moratorium, or as a vehicle to stop this project, irrespective of the fact that the project is needed and can and is being done right.

I think reasonable men and women in this state are increasingly coming to realize that we need to develop some of our energy resources in a manner compatible with our environmental laws, and that is exactly what the applicants want and are doing in this case. Montana and the northwest need Colstrip 3 and 4, and Colstrip 3 and 4 can and do meet the environmental requirements.

Your decision must be made on the merits of this Colstrip 3 and 4 application itself: 2 700 megawatt plants and associated facilities; and the record that has been built in support of that project; and on the basis of the objective criteria set forth in the siting act. Your decision should not be based on some subjective notion about this project, nor should it be based on any bias towards the Montana Power Company.

Under the siting act and applicable rules of evidence, all that is necessary is that this Board's decision be supported by substantial credible evidence. Therefore, it is obvious that if substantial credible evidence exists to support a finding by this

Board that Colstrip 3 and 4 meet these objective criteria of the siting act, then this Board has no other choice but to issue a certificate and a reviewing court is not going to overturn that decision.

What is meant by substantial credible evidence? The Montana Supreme Court has suggested that it is such relevant evidence as a reasonable mind might accept as adequate to support a conclusion. The record in this case, and the findings of fact and conclusions of law of the applicants, undoubtedly demonstrates that substantial credible evidence that Colstrip 3 and 4 do, in fact, meet these objective criteria of the siting act.

In our limited time at this argument, we will focus on key issues and evidence in this case. Mr. Bill Bellingham from Billings will first discuss the need for Colstrip 3 and 4, and then Bill will discuss the alternatives considered. Bill will then discuss some of the social, economic, and land use impacts of Colstrip 3 and 4. Jack Peterson from Butte will then discuss some of the environmental considerations, including the air pollution control equipment and its performance, and effects of air emissions. Jack will then discuss the transmission lines. Jack's argument will demonstrate, in the words of the statute, that Colstrip 3 and 4 represent the minimum adverse environmental impact, considering the state of available technology and the nature and economics of various alternatives.

I think you will realize, or do realize, that support for Colstrip 3 and 4 cuts across what have traditionally been different political, philosophical, and business persuasions. Therefore, following our argument by Bill and Jack, representatives of the

Bonneville Power Administration, Montana's Rural Electric Cooperatives, and Montana's labor organizations will present their views in support of issuing a certificate for Colstrip 3 and 4.

It is also significant, I think, that all of the utilities, federal, publicly-owned, privately-owned, are unanimous in their position that Colstrip 3 and 4 are needed, and these are the people whose responsibility it is to provide electric service to the people. And they recognize that it is needed as part of a regional plan.

Ron Wilkerson of the Bonneville Power Administration's Kalispell office will discuss the importance of this regional cooperation among all utilities and the need for Colstrip 3 and 4. Ron will also note Bonneville Power Administration's experience with 500 KV transmission lines.

Jim Follensbee from Shepard, who is manager of the Central Montana Generation and Transmission, Inc., will point out that Montana's rural electric cooperatives have, and are projected to have, exceptionally high rates of growth in electrical energy. And Mr. Follensbee will note the importance of Colstrip 3 and 4 because the Bureau of Reclamation, after 1977, can no longer serve the growth of Montana's rural electric cooperatives.

Rod Hanson, who is manager of the Sun River Electric Cooperative, will discuss some of the cooperative load growth, and he will emphasize that there is no other alternative to Colstrip 3 and 4 that can be brought on line within the time frame now available.

Russ Cox, representing the Association of Rural Electric Cooperatives in Montana, will express their views on this Colstrip

3 and 4 case. Russ will note that the Bonneville Power Administration has advised rural cooperatives in western Montana that because of delays in the construction of utility plants such as Colstrip 3 and 4, that they may have an energy shortage, we all may have an energy shortage commencing in 1978 and 1979, and therefore BPA has advised the cooperatives that they must develop curtailment plans for this energy shortage . Russ will then argue, therefore, that this Board should grant approval of Colstrip 3 and 4 as quickly as possible.

And finally, Ben Hilley from Great Falls, representing the International Brotherhood of Electrical Workers, will express labor's views on Colstrip 3 and 4, and he will point out that there are a lot of labor people in this state who have a right and who want to work and live in Montana.

In conclusion, I think it will become increasingly clear to all of you as you read the record and read the findings of fact and listen to this argument that despite the opponents' never-ending attempt to stop this project and muddy the evidence, that, in fact, there is substantial credible evidence that Colstrip 3 and 4 meet the criteria of the siting act, including the fact that it is needed, that it represents the minimal adverse environmental impact considering the state of available technology and the nature and economics of various alternatives, and the fact that it serves the public interest, convenience and necessity. And therefore, this Board is legally obligated to issue a certificate for Colstrip 3 and 4.

Thank you, and at this time I'll call Mr. Bellingham.

BY APPLICANTS

By Mr. William Bellingham
Attorney for the Applicants

May it please the Hearings Examiner, members of the Board, and ladies and gentlemen, I think I'd like to start today with a brief moment of levity, and incidentally, I had a campaign button I was going to wear; I can't remember the name of the candidate, but it seems to me it started with a D, but I've forgotten. I know what his answer would be: He'd say it was a kiss of death in any event, and please leave it off, I'm sure.

I think we could at times during the course of this hearing use a little more levity. It was broken up now and then, as I told the Board of Health, thank God, by the inimitable humor of our Hearings Examiner, Carl Davis, who, incidentally, did an excellent job.

I told the Board a story that -- and when I say story, something that actually happened during the course of the summer; it is in the transcript, but in the event that that may have been one of the pages you skipped over as you went along, I would like to repeat it, at the risk of having you already have seen it. Carl tells this on himself, and it actually happened. During the course of the summer, of course, there were countless sightseers around the capitol who were touring the capitol,and capitol guides were taking them around. In one of the groups, the guide looked down -- they were up in the balcony -- and said this is the Colstrip hearing and he went into some of the parties, and he pointed Mr. Davis out as a hearings examiner, and he said, you see that guy down there, he sits there and he doesn't do a thing and yet he draws $40.00 an hour for doing it, and one of the people in the group said, is he the speaker, and the guide shook his head and said, he must be, but he hardly ever speaks.

I realize that when I begin any final argument, whether it's a hearing of this kind, or a lawsuit, I feel a certain hesitation because I realize how much better the Board, or the jury, as the case may be, knows where the truth lies in any kind of a hearing of this kind than those of us that have been down in the pit, the attorneys. Really, you are the only ones intimately connected with the case who are unprejudiced. The rest of us are looking at the case through various colored glasses. I know that Mr. Shenker and Mr. Graybill and the rest of them say ours are a dark rose color; I know that theirs are black. But, yours are clear. We, of course, believe that justice is on our side, and the opposition feels the same way. But you, ladies and gentlemen, are the ones to decide, and because we have been working with the case so long, for better or for worse, I think there are certain things that we would like to point out to you which may help you and aid you in your deliberations, and that is the reason that we are here before you today.

Mr. Peterson and I decided earlier on this that we would divide the work load, with him taking certain subjects, and me taking the rest. Really, I think the way we divided it was rather unfair to him because the burden of the case fell on him.

My discussion today, however, will be concerned with three subjects that I handled, at least the three main ones, during the course of the proceeding: need, alternatives, and socioeconomics, as Mr. Ross has pointed out. He'll concern himself with basically air and water impact and so forth. And believe me, in the time that we have, although I realize that before the two days are up, you are going to say we have more time than we really need, and I suspect that's maybe the truth. We obviously are not going to be able to hit all of the points or the details, but at least I hope that we will be able to hit what we think are the main ones.

I wish I could stand before you today and say this is really a rather simple decision based upon x, y, and z. I can't do that, and I don't offer you any panacea as far as your conclusion is concerned, except that I am sure that you will take the evidence and the applicable law, weigh it, and come up with a just decision.

Today, for the most part, my presentation is going to be nothing more than hard, cold facts. These are the facts that were presented during the course of the testimony, and I realize that at times they are going to be boring because they do deal in numbers. I wish there were some way I could make these numbers come alive to make it more interesting, but I know of no other way to do it than just to present them as they were presented during the course of the hearing. But I think in the final analysis that the figures and the evidence that we present to you today and tomorrow will help you reach, I hope, a favorable decision.

Now, there's been much discussion during the course of these proceedings about peak and average energy. Some of the witnesses attempted to analyze it and explain what the meanings were, and some of them did a fair job, and others didn't do quite as well. I would like to spend just a minute or so, because we are talking about peak and average energy so much, to go over a few things that I think regarding these points, and hopefully, perhaps, will help you understand what we mean by that. Peak, incidentally, is sometimes called capability.

But anyway, peak actually means the maximum rates of energy consumption or delivery over a short period of time, as a rule, such as one or two hours.

Energy or average energy, as it's often called, means the average equivalent of a continuous flow of energy for a longer period, such as a day, a week, or a year.

Peak, when referring to a load, means the highest rate of energy consumption that can or did occur during a certain time period. The peak rate may have lasted for only one hour out of a year, but that rate will establish the generating capacity that must be kept available to cover the load in question for that one hour peak. And if the utility company doesn't keep that generation available for that, or doesn't have it available, then we're going to have blackouts, brownouts, interruptions upon the system.

Now, average energy is the total integrated quantity of energy used over a period of time during which there might be light or there might be heavy load hours. The average is the total energy for perhaps a day, a month, or a year, divided by the total number of hours. That's average energy.

Now, heavy load hours that I referred to are often those, in Montana at least, occurring -- I should add the Pacific Northwest, generally -- in the evening when the lights are on, there's cooking, heating, televisions, so forth. These all come on about the same time. Light load hours are the other hours of the day. Obviously the average load for all hours of a day will be lower than the peak rate of use over heavy load hours.

But, it is all classed as energy. The peak is simply a period of maximum rate of consumption.

With that in the background, let us take a look at an example. Perhaps it will help clear it up. Maybe we could compare it with the characteristics of a home water tank that we have in our own basements or in the kitchen or wherever. The water tank has a limited storage capacity of generally around 50 gallons. It has also a limited ability to heat cold water to the desired temperature, heating perhaps 20 gallons per hour. On the basis of the foregoing, you can use 50 gallons of hot water in a very short period of time before running out. This fast rate of usage is equivalent of an electrical peak load. However, the continuous delivery capability of hot water is only 20 gallons per hour and this is the equivalent of electrical average energy.

Let's turn next to the main subject of need, and as we go through this in order to make it a little more descriptive, and I hope a little more palatable and easier to understand, I would like to put on the screen here a series of slides, most of which are nothing more than our exhibits that were introduced during the course of the testimony, copies of which, of course, you have.

So, I'd like to turn first of all to the first slide, Exhibit 1. Now these are the plants in Montana, existing or under construction, owned by Montana Power. I'm not going through them; I think it's quite obvious. Can you all see the projection there? To the extreme east we have Colstrip units 1 and 2, and going over to the extreme west, Thompson Falls. There's no reason for me to go into any further detail. Those constitute the Montana Power system.

I'd next like to turn to a slide that we had prepared. It's not in evidence. I had it prepared for the hearing today. This indicates, with the exception of plants that no mention was made of during the course of the testimony owned by Montana-Dakota Utilities Company, being in the extreme eastern part of the state -- we didn't put them in because there's no reference to them in the testimony -- but, these are the plants, generally speaking, that are located in the state of Montana. Now, we've included here the plants of the Montana Power Company that appeared on the previous slide. But in addition, let's start over here at the extreme eastern part of the state, we have the Fort Peck reservoir, with which you are all familiar, I'm sure. The Bureau of Reclamation markets that particular energy generating place. The next one is Yellowtail down near Hardin where, once again, the Bureau of Reclamation markets the energy coming out of that. As we move up to the northwest, we have Hungry Horse, which is marketed by the Bonneville Power Administration, the BPA. We have the Big Fork unit -- incidentally, plants owned by companies other than Montana Power are indicated by a square -- the Big Fork plant, a very small one, is owned by Pacific Power. Then in the extreme northwest we have the Libby Dam unit, which is, once again, marketed by BPA, and below that we have the Libby combustion turbine, a small unit; Pacific Power owns this. And last we have the Noxon Rapids, which is owned by Washington Water Power. So, I think that pretty much completes the list. Incidentally, I might add that all of these plants at one time or another were referred to in the testimony or do appear in the various exhibits.

Next I'd like to turn to Exhibit number 2, showing the territories covered by the applicants. Montana Power appears on the board in brown; incidentally, Montana Power's service area comprises approximately 96,000 square miles, about 65% of the total land area of the state. Montana Power covers the largest territory of any investor-owned utility in the United States. I might also mention that it provides power to Yellowstone Park, which is a small part of its total load. Incidentally, as you know, Montana Power is slated, if they are built, to receive 30% of the output of 3 and 4.

Then we have next, Puget Power, in the northwestern part of the country, in the state of western Washington. It is slated to receive 25% of the power.

Next we have Portland General Electric in Oregon. The two largest towns in its service area are Salem and Portland. It is slated to receive 20%.

Next is Pacific Power and Light. Pacific Power and Light has customers in some six states: Montana, Oregon, Wyoming, Washington, California, and Idaho. In Montana it services the Libby area, as well as the Kalispell-Whitefish. It is slated to get 10% of the generation.

Next I would like to show quickly Exhibit 2A. Now the original exhibit had a list of thermal plant schedules, as well as the map, but because of the difficulty of putting it on the screen, we had to leave off the thermal schedules. You have that exhibit however. What we did want to show you is the transmission system in the Pacific Northwest, and as you can see by the various lines that appear on there, that we do have a good many transmission line facilities in the Pacific Northwest.

I might mention that Colstrip 3 and 4 are just two of many plants planned or under construction at this time as far as the Pacific Northwest area is concerned. Nine nuclear are on the drawing boards, and seven coal-fired steam, it is hoped, will be coming on line the last and the late 1980's.

Now there's been a lot of discussion during the course of the testimony regarding loads and resources, and I might mention that all utility companies have sections that are devoted entirely to this particular subject. It is an important one because it is on the basis of the information gathered and collected by these sections that the utility companies make plans as far as the future is concerned relative to generating plants, what they need to do down the line in order to satisfy and meet their customers' demands.

Now as far as load forecasts, you've heard a lot of that, and you'll see them on the screen here today, the companies in this particular proceeding, much like utility companies throughout the country, have various ways, various approaches, but basically it boils down to one general analysis as far as their methodology is concerned. They take the historical trends of the past, modify them by judgment of effects of known or unusual loads such as economic conditions, population figures, and so forth. Now there have been developed in recent years, computer methods to improve the accuracy investigated in other methodologies, and the utility companies are taking these under advisement. The five companies in this case are doing the same in the hopes that they can improve upon their load forecasts. As many witnesses have testified, the methodology used by these utility companies in the past has served them well. However, they are always attempting to make improvements. There has been testimony in this case by several parties, Montana Power people, Hofacker, O'Conner, and others, as well as Goldhammer, and some of the parties representing the other four applicants, that it is better to overestimate the loads than to underestimate them as far as the future loads of the utility companies are concerned. If you underestimate them, you're going to lose the taxes, the payrolls, you're going to have poor service to your customers, you could have blackouts, brownouts, you could have economic stagnation as a result of it. If you overestimate them, you're going to have costs of unusual transmission and generation involved, at least for a short period of time, which, I might add, are counter-balanced to a certain extent by the fact that if you build early, you are going to evade some costs of inflation which is with us, apparently, and here to stay, as it has been for many years. But in any event, when you balance the equities, it's better, of course, as we've said, and as the testimony has come in, to overestimate the loads than underestimate. Now this does not mean, however, of course, that a utility company purposely goes out and overestimates the loads. They attempt to apply their own methodologies to come up with an honest solution to the problems that they face, and I think utility companies, particularly the five applicants, over a period of time, have done an excellent job in this respect.

We're now going to turn to some of the exhibits that refer to Montana Power Company individually. The first one I'd like to show you is Exhibit 5B. This is the Montana Power load and resources exhibit, excluding units 3 and 4. Here we're talking about annual peak. In this case, I think you'll see a deficit of nine megawatts, and deficits, of course, have parentheses marks around them, nine megawatt deficit scheduled in 1981 and '82, and we're talking there about a period from July 1 of one year to June 30 of the following year, and that deficit increases every year thereafter until it reaches 252 in 1985-86.

Then turning next to Exhibit 6B, a similar one, Montana Power, this excludes units 3 and 4. The previous one we looked at was peak; this one is average energy, and this, as I say, excludes 3 and 4. We have a projected deficit of 38 megawatts in 1979 and '80. It goes down to 26 in '80 and '81, and then it increases from then on, 71 on up to 267 in 1985 and '86.

The next series of exhibits, two in number, first being 7B, will take care of the same figures as the slides previously, with the exception that these will include units 3 and 4, as you see at the top of the exhibit. Now when we take the peak projection, and this, incidentally, is Exhibit 7B, we have no peak deficit for the years indicated up to '85 and '86, but the testimony indicates that if you extended those years out, you would have a seven megawatt deficit for '86 and '87. That, of course, is not shown on the chart. And incidentally, I think there is a deficit back, I thought prior, apparently not.

Let's turn to 8B next. Now this includes 3 and 4 and this is our projection of average energy in the future. We have a 38 megawatt deficit in '79 and '80. That's the one I was trying to find on the previous chart. And then we have no deficit out through '85 or '86. If you extend that out, you will have a deficit in '86 and '87, even with 3 and 4 on line.

What this boils down to is that customers will require, and this is the customers of Montana Power, all of the energy produced by Montana Power under their analysis by '86 and '87 and thereafter; in other words, they will use all of the energy that Montana Power can produce, including that from 3 and 4, by '86 and '87, and after, and they will use up all the annual peak by '87 and '88, after which, of course, new sources of power will be needed. Now these years that I gave you pertain to units 3 and 4 coming on line.

Let's turn quickly now to the exhibits of the other companies, and I will go through this rather rapidly, if I might. The first one will be Exhibit 18B, Puget Power. All of these exhibits vary a little bit from Montana Power because of the way that the companies set them up.

Puget Power has two sheets, one from '75-'76 to '79-'80, and a second slide from '80 to '81 on. Excluding 3 and 4, we have a peak deficit of 10 megawatts for 1980 and '81. Now that's excluding units 3 and 4. We have a deficit thereafter, through '85-'86, and it reaches a figure of 708 in '85 and '86. With 3 and 4 on, and that's that line 28, with 3 and 4, we have a peak deficit of 133 megawatts for '82 and '83, and on up until '85 and '86 when we have 410 projected. Then when we exclude 3 and 4 as far as energy itself is concerned, we have 103 deficit in '79 and '80 -- that's part of the time that 3 and 4 come on -- and each year thereafter, with 383 megawatts in '85-'86. With 3 and 4, Puget is going to be energy deficit of 103 watts -- megawatts for '79 and '80, prior to 3 and 4, and deficits for '80-'81 through '82-'83 and '85-'86, as indicated on the lines pointed out.

We'll turn next to Washington Water Power Exhibit 20B, and here again we're dealing with two sheets. First of all, excluding 3 and 4, and I'll only get the highlights here as far as peak is concerned, we have a deficit of 42 megawatts of '78 and '79, and for every year thereafter through '85-'86. In '85 and '86 we have a deficit of 430. In order to obtain that figure you have to add 210 and 220, the 210 for the Colstrip. As I say, these exhibits are handled in a little bit different manner by the companies, but that is the net result. Then with 3 and 4 on line, you have a peak deficit for all years, with the exception of '81 and '82. Now when we turn to energy, excluding 3 and 4, and we were dealing with peak before, we have a deficit in the years '78 and '79 through '85 and '86, a deficit of energy throughout. Now they do have Colstrip cranked in there, as you will see, of 210. The 210 applies to peak energy, and it moves up, and so forth, so you have to take those into consideration, and you do have a deficit in the years '78-'79 through '85 and '86. With 3 and 4, you have a deficit of energy for '78-'79 through '80-'81, and '85 and '86.

Next, Portland General Electric, Exhibit 19, excluding 3 and 4, we have a situation where the peak is adequate to meet the requirements. With 3 and 4 on line -- and I'm talking about peak -- the addition of the energy that Portland will get from 3 and 4 will be sufficient to eliminate any deficiency, and useful in relying, or in reducing the reliance upon combustion turbines. Now excluding 3 and 4, they are energy deficient for the entire period involved. Reliance on combustion turbines would eliminate the deficiency in most, but not all, years. With 3 and 4, it would reduce, and in several years actually eliminate, the energy deficiency.

Pacific Power and Light, as far as the entire system, and we'd like to subdivide this into their entire system in the six states that I mentioned, as distinguished from the Montana area that they service, as far as Pacific Power is concerned, excluding 3 and 4 insofar as peak, we have a deficit of peak for '82-'83 and all subsequent years. The highest there of -- it says 840, actually it's 980 because you have to add the 140, their interest in Colstrip 3 and 4, to the 840, and you arrive at a 980 megawatt deficit in '85 and '86. With 3 and 4, you have a deficit of peak for '83-'84 through '85-'86. Now as far as energy is concerned, excluding 3 and 4, you have a deficit in '78-'79 and all subsequent years; with 3 and 4, you have a deficit in '78 and '79 and all subsequent years, also.

Now as far as the Montana system is concerned, let's take a quick look at that, peak and energy. As far as peak is concerned, and you will recall that they service the areas in the northwest part of the state that were previously referred to, 85% of its peak must be imported from outside Montana in order to meet its service load up there. And excluding 3 and 4, 117 megawatts need to be imported in 1980 and '81, and this would increase every year. Excluding 3 and 4, as I indicated, 117 will need to be imported. With 3 and 4, the imports will reduce the necessity of bringing in as much energy outside the state as if 3 and 4 were not on line, but it will still be necessary to import.

Now as far as energy is concerned, the most important criteria, in the next slide, they actually, at this present time, import from outside the state, from 95 to 98% of the energy. Excluding 3 and 4, they need import 65 megawatts in 1980 and '81 to meet the energy. That's a combination of 39 and 26, and it increases each year thereafter. With 3 and 4 on line, imports will be reduced to 26 megawatts in '80 and '81 and zero thereafter. They would have a need for additional imports in the years '86 and '87, however.

Now I'd like to turn, quickly if I might, in the same vein, to the composite of the five applicants. We have exhibits regarding this. This has boiled down the five individual figures, energy and peak, for the companies, and has consolidated them into one exhibit and one piece of testimony. Excluding 3 and 4, we have Colstrip 3 and 4 participants -- peak is up above, average energy is down below. Taking peak up above, we have projected an 855 megawatt deficiency in '82-'83 to a deficit of 2536 megawatts in '85 and '86. Incidentally, these figures were compiled from the exhibits that were introduced into evidence, and from the testimony. Now energy, as far as the five companies are concerned, we show deficits in every year, with the exception of two: '76-'77 and '77-'78.

Let's turn then next to a slide as far as the five applicants are concerned where we include 3 and 4. The slide you just saw excluded it. This includes 3 and 4 and the effect upon the five. As far as peak is concerned, we have deficits for the years '84-'85 and '85 and '86. The last year shows a deficit of 1295. When we go down below and take a look at the energy with 3 and 4, we have a composite deficit in four of the five years commencing with '81-'82 and thereafter. The greatest deficit is 723 in '82-'83, 723.

So much for the projections of the companies. I'm sorry, it's a rather dull subject to deal with statistics in this manner, but we felt that it was necessary to bring them to you to show you what the projections of these companies are, because basically the data that are contained in these exhibits are crucial to this hearing, they're crucial to the future of the companies involved.

Now Exhibit number 9A is a Montana Power load projection analysis. You'll note a heavy line, no interruptions at all, just a solid, heavy line to the left. These are the actual energy loads that they have experienced in the past. Then when you come to the dotted lines, dashed lines, those are projected energy loads as far as the future is concerned. The top line shows the total load. That's everything on this system. The bottom line shows the base load. You've heard a lot about base load during the course of the testimony. The base load actually is the total load up above, less blocked loads that are trendable. In other words, that -- or, that are not trendable, such as Anaconda Company and certain interruptables. In other words, it's very difficult for them to trend the Anaconda because of the ups and downs, peaks and valleys, and so they divide it into a base load and a total load. As indicated, the language to the right on the bottom, the growth for 1955 to 1974, Montana Power had a growth rate of 5.6% per year.

Now Exhibit 9 was introduced -- we don't have it here -- during May, as I recall, one year ago, and because of changes that were made in forecasts, and so forth, when we resumed this part of the hearing in January of this year, we put in a new 9A to show the differences. It's rather interesting. In the old 9, because of the economic recession, we have a larger balance showing that the load growth was not going to increase as much as they had hoped as far as that particular time was concerned, as they originally had thought. And you will note here now that the balance has been strengthened out because of events of the last six months and more in which it appears that the economic recession is on the wane, and so for that reason we have a sharper climb, incline, during that particular period.

When we talk about the recession, it's hard to put our finger on it, but perhaps this would help us. People seem to think that the economic recession actually hit in the spring of 1974 and lasted through the first half of 1975, perhaps August or so of '75, after which things seemed to be coming back to a more normal pattern, slowly coming back to normal. I realize economists might disagree with me as to the exact time that it commences and when it finishes that I have indicated, but at least this is the general period of time that I am referring to when I talk about the recent recession.

Now Exhibit 10A is a firm load comparison, actual versus the estimate of both peak and energy over the years by Montana Power. Now the red line shows what Montana Power estimates during that period of time. The solid line shows what they actually experienced. Now I think overall it shows that their load analysis and their estimates were very close to what actually happened with a few discrepancies here. You will note here that the Anaconda Company strike -- of course, no one could foresee that -- accounts for the actual count being lower than estimated, somewhat. Here we have another Anaconda Company strike, and in this period here, '68-'69, somewhere in there, loads not anticipated were lost during that period of time, Glasgow Air Base and an Idaho mine load, and we also had a reduction by Anaconda during that period of time also, which accounts for the apparent discrepancy.

I might point out here the upper part, of course, is peak, and this is always a problem. The companies have to build their generating plants in order to meet their peak loads. Without it, they're going to have to curtail services, or otherwise interrupt it.

I'd like to briefly take up now, if I might, the past and future load growths of each company, with the exception of Montana Power, because on Exhibit 9A we did go into the past load growth of Montana Power. I'd like, very quickly, to throw a few figures at you relative to the other companies. These figures appear in the findings of fact and are contained in there, and I'll just briefly go over them.

As far as Puget Power is concerned, from '60 to '75, they had an average energy growth of 8.2% per year. They estimate over the next ten years an increase of 6.1% for peak and energy. Washington Water Power, '65 to '75, a net system growth of approximately 4.8% per year. They estimate 4.3 over the next ten years. Portland General, a next ten year energy increase of a little over 7% per year, consistent with their long-term trends in the past. Pacific Power's entire system in the next ten years, 6.2% per year. Montana, as far as Pacific Power's concerned, they have had an energy increase of 7.4% from '62 to '74, and their forecast over the next ten years is approximately 6%.

And I might say that companies have reduced their load prediction for the next ten years than they have over the past, the reasons being conservation, elasticity, costs of electricity, and other factors, so right now they have reduced their predictions somewhat over what they had originally prophesied.

Now as far as recent load growth of each company is concerned, we have put on a slide some of the evidence that is also in the findings of fact. We think that the recent load growth for the applicants supports their forecasts covering future load growth, and to show that we would like to point out what has recently been happening upon the companies' systems.

First of all, the increases of 1975 over 1974, and we have here on the lefthand side the various companies, and in the first column, the calendar year. We do have at the bottom an indication where the testimony came from. I'm not going to go into that. Montana Power, '75 over '74, 1.1%; now that was the total load. If the Anaconda furnace load had been on, as it will be in the near future -- it may be on now, I do not know -- the load would have approximately been 5%, as indicated on footnote 1, over 1974. Puget, the figure is 7.5. Washington, 5.4. Portland, 2.1. I might mention there they had a strike last year of their largest industrial customer and if it were normalized to account for that, it would be 4.5 to 5% over '74 instead of the figure 2.1. And Pacific is 5.9, and I should add that as far as the Montana system itself is concerned, is represents a 14.4% increase over '74, quite an increase in their system.

Now as far as peak for the month of December, 1975 itself is concerned, that is the second column, as we go down. There's no sense in my going through the figures. There's a composite of five applicants, of 13.0% for December of '75 over '74.

The third column covers a period of September, 1975 through December '75, when compared with the same period the previous year, 1974. Here you have Montana Power, 2.5 total load, and that would be 8.7% as far as base load is concerned, as indicated. Then you come down with a 10, 8.4, 5, 9, and a composite total of 8%.

Turning next to recent load growth in the Pacific Northwest, from September '75 through February of '76 -- remember this is recent history, the last few months -- we have average energy in the West Group area of 7% above the '75 load, and I might say the West Group, you've read a lot of it in the testimony, comprises over a hundred utility companies in the Pacific Northwest. Their load increased 7% during this period of time. Another group is the Coordinate System of the Northwest. It's like the West Group, plus the Montana Power area, and here we had a 7% increase also during this period of time from September through February.

As far as the West Group Forecast, the latest of March of this year, they forecast an annual rate growth of 5.1% peak and 4.8% energy, and as Kent Anderson of the National Economic Research Association testified, from the period of '69 through '75, the sale of the five applicants grew more than 1 1/2% more than the West Group as a whole, which indicates that the five applicants, as far as their future loads are concerned, based upon the past, are going to grow at a considerably more rate than the other members of the West Group.

Well, getting away from figures for a few minutes here, I'd like to bring out some of the reasons why the companies' economists, in general, believe that the demands for electricity are going to increase in the future. There's been a lot of testimony in here from the Montana co-op's and from the BPA. A lot of this testimony is based upon expansion of irrigation systems, particularly sprinkler, and this is one reason why we do expect demands for electricity to increase in the future just as they have in the past, perhaps not quite as rapid a growth, but certainly every indication that it will be a growth that is going to make the companies hard-pressed to meet it as it comes on. We are going to have new sewage treatment and water treatment facilities added to many of the towns in the state of Montana, and elsewhere. We're going to have an increase in population, something that's always with us. We're going to have a growth of new industry and technologies in the future. We're going to have increased industrial loads. We're going to have pollution control devices added in order to meet environmental clean air and water standards, and we've seen that in the state of Montana with our refineries and many other industries being involved. We're going to have a conversion to electricity from alternate fuels, in many cases, and increased use of electricity caused by increased prices and scarcity of alternate fuels such as oil and other things which we call cross-elasticity. I mentioned the co-op's. Something that I cannot over-estimate, I think, as far as their projected future demands are concerned, they are all very much concerned about what is going to happen in the future; there's no need for me to go into that. They will appear before you here later this afternoon and will give you the facts and the details of their problems.

Let's turn to a few quick subjects here before I finish up with the energy problem and the future demand for it. Lead time, as far as coal-fired generating units are concerned in Montana, the testimony is replete that it will take nine to ten years from the beginning to plan and put on stream a coal-fired steam generating unit. This includes preparations and plans relative to picking a site location, and as we go on up the line, accumulation of meteorological data, a time for obtaining permits, and this in Montana, as we well know, can take considerable time. Hopefully, this problem will not occur quite as much in the future as it has in this particular case, but the time for obtaining permits more and more is becoming a problem to everybody involved. The time for placing orders for materials and the building of the plant is the last on the schedule, and this all adds up to about nine to ten years. Now outside of Montana, the time scheduled is somewhat shorter, perhaps, although here again the problems are complicated to a great extent by siting problems, as in Montana, and believe me, I am not arguing against the background and the reasons for siting statutes. I think they are an excellent thing and they are certainly needed in Montana as well as elsewhere. The problem is the difficulty of obtaining permits from the regulatory agencies, because the time delays that go on, as you are well aware of, are almost incomprehensible. As far as Washington is concerned, the state of Washington, it has been estimated that it'll take approximately six or more years. In Oregon, apparently more, eight to ten years, much like Montana.

However, it should be added at this time that our crucial period ahead, as far as Montana Power is concerned, and to a great extent the other four applicants, is the period commencing in '79 and '80 and running through '81 and '82. These years are crucial, and I don't mean by that, downgrading and future years because those are going to be crucial also, as has been indicated by the exhibits. But these years commencing in '79 and '80 are particularly crucial to Montana Power.

Now as far as time schedules and costs of these plants are concerned, the original plans called for completion of the two units in '78 and '79 mainly because the time taken to process the application by the Department, which used up every single day and hour of the time alloted to them by the statute. It had to be changed to '79 and '80, and then we ran into a time delay as far as these hearings are concerned, and the plants were further slipped to 1980 and '81. The estimated costs of the units now, including the costs of transmission, is in excess of 990 million dollars.

The duty of the company to its customers; I'm specifically addressing myself to Montana Power, as testified to by George O'Connor, it has a responsibility to furnish electricity when they need it at reasonable rates. And one of the company witnesses from outside the state indicated that in his state the duty of the companies there, the utility companies there, is much the same as those in Montana, and I think it's universal throughout the country.

Montana Power, as an importer -- and I like to make this distinction, noting that I'm talking about Montana Power itself, and not the state of Montana as a whole -- since the early 1960's the testimony is in the record, Montana Power has been a net importer of approximately 20% of its requirements from other utility companies outside the state, and even with unit number 1 on line, they figure that the current year, during the current year, they are going to import approximately 15% of the peak and 13% of their average during this particular year, their average energy. So you see that even with 1 going on line, although the imports are being reduced from 20% down to what I indicated, 15 and 13%, still Montana Power is a very heavy importer of electricity from out of the state.

Now let's take a quick look at the state of Montana as a whole, as distinguished from Montana Power. Montana as a state, as a whole, is an importer of electricity for its citizens if and when we exclude power generated at the federal dams such as Fort Peck -- and you saw them: Fort Peck, Yellowtail, Hungry Horse, and so forth. And incidentally, most of the generation produced by these large, federal dams goes out of the state; it's committed to go outside of the state, and accordingly, is not available to Montana citizens in this state. So when I say Montana as a state is an importer of electricity for its citizens, when we exclude the power generated at the federal dams, which is committed outside the state and not available to Montanans, what do we mean by committed outside the state? Long-term contracts and so forth. Now the energy produced by these dams is marketed, for the most part, by Bonneville and it has preference customers, rural electrics, co-op's, municipalities, and so forth, so under no circumstances, under the federal law that's applicable to that, can they take that energy and switch it over from their current customers to citizens of the state of Montana. So I would like to make that distinction between Montana and Montana Power as a whole.

There was an indication that you wanted to take a short break every hour and this might be a logical time.

MR. DAVIS: Mr. Bertsche?

MR. BERTSCHE: A question comes to my mind is, Montana Power is an importer of 20% of its power, and even after 1 and 2 you're going to import power, why did you go 50-50 on 1 and 2? Why didn't you go 80-20 and take care of this so you would have your own power? This has bothered me. And another thing that's bothered me, I've noticed in all these other plants that are built in Washington and Oregon -- I may have missed it -- that we're not participating in any of their energy.

MR. BELLINGHAM: That Montana Power is not?

MR. BERTSCHE: Yes.

MR. BELLINGHAM: Sir, I'll have that answer for you when we come back.

MR. DAVIS: Let's take a ten minute recess.

(RECESSED AT 10:15 A.M.)

(RECONVENED AT 10:28 A.M.)

MR. DAVIS: Mr. Bellingham?

MR. BELLINGHAM: First of all, I'd like to answer Mr. Bertsche's questions which, incidentally, were good ones. The first was why did not Montana Power take a bigger interest of 1 and 2 units rather than the 50%. I might mention this, that Montana Power, prior to the time that 1 and 2 were decided upon, and the evidence is in the case, made a lot of studies relative to the lowest cost alternatives available to it as far as future generation is concerned. Their study, comprising Exhibit 16, is an example of that. What they did when they decided upon the interest in 1 and 2 that they had, they got the power that they felt they needed under their forecasts for three or four years, up until '79 or '80. Now if you build too far ahead, you're going to have capacity on your hands, you're going to have too much of an investment, and so what they try to do is build in logical increments ahead and after they have caught up with that particular plant, find new resources through further building or otherwise. But, when you overbuild, which would have been the case as far as 1 and 2 are concerned, then you have too much investment and you are losing money upon it. So as a result of their studies, this was the reason that they felt that a 50% interest in 1 and 2 was the one that would best fit into their schedules as far as the future is concerned. Now why didn't they go into other plants in the Pacific Northwest? I might mention here that indirectly they have. They have bought a share, as I say, indirectly, through long-term contracts with other companies. For Example, BPA and other companies, they do have long-term contracts with them to provide power for them. On the other hand, if you import or get power from other companies to too great an extent, you lose a certain amount of reliability that you like to have in your system, and I might mention that in addition to long-term contracts with other companies, they do have a 10% share in a Washington Public Power supply plant that is scheduled to come on originally in 1980, and now it's been postponed until 1982, a WPPSS plant, as referred to. They also have the shares they have had for some time in the Hanford nuclear project, and that's indicated upon the exhibit. So you see they have gone into plants with other companies in the Pacific Northwest through ownership or through long-term contracts. But, when they made their schedules, when they made their studies, they found that the lowest cost alternative to the Montana Power system was the Colstrip units 1, 2, 3, and 4, and that's why they counted and banked upon them. As I mentioned, reliability; they have control over their own interests down there, and so from that particular vantage point, they're in good shape. Now as far as long-range plans after '85 and '86, and this is looking way down the line and into the future, they hope that they may participate with other plants, with other companies in the Pacific Northwest, but that is down the line and those steps will have to be taken at the appropriate time. I hope that answers your questions.

MR. BERTSCHE: Well, wouldn't you rather own part of a plant than have a long-term contract because a contract can be cancelled, and if you own it, you own it.

MR. BELLINGHAM: Well of course, these long-term contracts are firm contracts. No one can cancel them. There's a real problem there. They wouldn't want to under any circumstances the way they're written. They'd violate the terms. I think Montana Power historically has relied upon long-term contracts to a certain extent. Now back in 1964, the Bechtel study, Exhibit 119 as I recall, went into this. And they told them that eventually they should reduce their long-term contracts down and rely upon their own generation, and this is one of many studies that were made regarding this point. And so there is a point beyond which long-term contracts, they certainly don't want to get over 20 to 30%. And reliability is one of the reasons.

DR. CLARK: I have a question to maybe just wrap this up. In relation to the net imports that the company has now, are those supplied under long-term contracts?

MR. BELLINGHAM: Imports that the company has now?

DR. CLARK: Yes. You're saying that you have a net import of 20%?

MR. BELLINGHAM: Yes.

DR. CLARK: How are those supplied? By long-term contracts?

MR. BELLINGHAM: Yes, sir. It is my understanding that those are long-term contracts. I guess there's a difference between long-term and short-term, I've been informed. Some of them are short-term contracts.

DR. CLARK: But they are contracts rather than ownership?

MR. BELLINGHAM: Yes, sir, they are contractual.

Mr. Bellingham (continuing)

Alternatives. Prior to choosing the location and deciding upon 3 and 4, various studies and research were made concerning alternatives. Among these alternatives, and I'm going through them very quickly because of the time constraints, was the purchase of power from other utility companies. I think we've gone into that already. I might add, however, as far as other utility companies are concerned, they are going to feel the power crunch just like Montana Power, so as far as long-term contracts are concerned, in the light of what's happened to Bonneville and others, it's just not available during these critical years ahead. There's none available.

Construction and operation of alternative generations sources such as hydroelectric, there's been a lot of testimony in here. I think, without any question, the situation as far as hydroelectric sites are concerned in Montana, they're just ain't any available as far as energy is concerned. Oh yes, they could add; they could do this at a tremendous cost and increase the power, or the peak, perhaps, somewhat, but as far as what they really need down the line, energy, it is not available. And that is the situation, generally speaking, in the Pacific Northwest. There are a lot of sites around, they're not good sites. What they would develop is peak and not energy which is the crunch as far as these companies are concerned.

Nuclear, yes. Down the road. We know what's happening, however, to nuclear plants throughout the country. Moratoriums, votes, what have you, referendums and things. So, we've got problems with nuclear as far as the future is concerned, and as far as Montana Power is concerned, they made studies, they decided it was not feasible economically in this state.

Oil and gas, we know what the story is there. Costs in the future; the availability in view of the present crunch upon this in the United States.

Now, I'm going to classify the rest of them. Coal gasification, solar, geothermal, magnetohydrodynamics, and wind. We classify those as exotics. They are certainly something to be looked at in the hope that down the line this will be available. But the evidence is, it is not going to be available, as to any one of the sources, until the late 1980's, if then. So to rely upon solar, geothermal, is talk, it's poppycock and nothing more, presented by people that are anti-3 and 4 and generation in general, to attempt to slow things down. It is not feasible. It has not been feasible, and hopefully it will be sometime in the distant future, but as far as right now is concerned, anybody that would like to rely upon these exotics is in for a hard time down the future.

Another alternative was not building additional generation. They decided that from a standpoint of reliability and need, that they should.

Building smaller units -- and I think this is important -- there has been a lot of discussion throughout about the economies of scale. Strictly speaking, a large power generating plant, all other things being equal, costs less to build per unit of capacity than a small plant, and it also costs less to operate. And so, for that reason, when they want to analyze 1, 2, 3 and 4, they analyzed it in the light of smaller units, compared them down the line, and as a result of these comparisons, they decided that these units were the proper size. Smaller units in the long run are more costly, would be more costly, to Montana Power and, in turn, to its customers.

All right. Building a plant in another location. I'll go into that. Much research went into this as far as Montana is concerned, Montana sites. Their ultimate decision, as I have indicated, is that the plants at Colstrip offered the lowest cost alternative and the best choice to meet the power needs in the future, and the lowest cost to the customers.

Exhibit 14 indicates the other sites that were analyzed in Montana. And because there has been so much testimony attempting to show that their planning was incomplete. I'd like to show very briefly what the story is. The plant for the location at Billings, Montana -- let's start with that because we have the Corette plant down there. They finally discarded that and Mr. Labrie, in his testimony, goes into detail. I'll hit the highlights if I can. They had problems at the Corette plant as far as environmental problems are concerned, pollution. They hope they have these corrected. At present it looks as though they do. There also was a certain amount of opposition in the city of Billings to this, including the newspaper, and as a result they decided finally that maybe another location would be better. Great Falls, unfortunately, or fortunately for Montana Power I should say, they do have a large generating source up there in the dams, and they felt that because this was a major source of generation to them already, it wouldn't make sense to add additionally to that area and to have to move coal up there and then transmit the energy out. Townsend was one of the locations that were looked at. It was difficult to, they knew, obtain the right to use Canyon Ferry as a cooling reservoir because of the fishing there; it was a long railroad haul from Colstrip; meteorologically it was poor because of the heavy inversion, air pollution, and so it was knocked out. Clarkston, the problem there is the air pollution effect because of a deep valley. Trident-Three Forks, air pollution already in the area; the prevailing winds would carry it toward Bozeman, something, of course, they did not want to have happen. And so that was finally pushed to one side. Livingston. They felt Livingston was a good site as far as coal transportation, not too far, not over any mountains, a level grade, the cost wouldn't be excessive as far as coal is concerned, although compared to mine-mouth at Colstrip, it would be much more. But they felt that Livingston had a lot to offer as far as water and so forth is concerned, and they spent a lot of time on this particular area. Cushman they looked at very closely. They were concerned very much up there about adequate supply of water. Colstrip had a lot of advantages. A short railroad haul. They drilled test wells in the area. They had eight sites in mind. And so eventually it boiled down to Livingston, Cushman, and Colstrip, and they made further studies on that and they decided that Colstrip economically was the best, but not only economics entered in. They felt that environmentally it was a good location. All the other factors led to Colstrip. And so for that reason they decided finally to build the two 350 megawatt units known as Colstrip 1 and 2.

Now, let's quickly go into the mine-mouth versus coal haul alternative. Actually there have been only two studies prepared for testimony in this case. Oh yes, the evidence is replete with testimony relative to this study done back in '60-some, and this study done in the early '70's, and so forth, but as far as actual studies prepared for this case, there are only two complete ones. They were both put on by us through Montana Power, Hofacker, and through Mr. Pettibone.

Let's first go into the Hofacker study, which comprises Exhibit 12. What he did here was make an economic analysis with the relative costs of moving coal from Colstrip to Hot Springs, compared to moving the equivalent amount of energy from Colstrip to Hot Springs by electric transmission system. 37 years was used because this represents the estimated life of the plants, at least for book and study purposes. Now he did not include here, and this is where his study differs from Pettibone's, he did not include the costs of plants, assuming that there would be a washout at both ends. Now what it boiled down to was the costs of merely moving the energy. His approach was conservative, coal freight was escalated at 3% per year, which certainly -- and when I say conservative, it certainly favors the coal study because we have shown in the testimony here the average escalation of the last five years up to 1973, according to Pettibone, was 7.28%, and when we include '74 and '75 figures, there was 9.23% over the last five years as far as coal escalation is concerned. In his study, Hofacker from the Montana Power projected at a 3%. The railroad freight was figured at 9.5 mills per ton mile because it was used by the Department analysis in the Department analysis by Malinda Schaill, a college professor from the University of Montana. It's extremely conservative. Our Exhibit 213, a letter from Burlington Northern to Washington Water Power back on October 8 of '75, indicates Colstrip to Spokane, "12.03 mills per ton mile." 12.03 mills per ton mile; the figure of 9.5 mills per ton mile was used.

I'd like to show quickly a slide, page 8 of the Hofacker testimony, and Exhibit 13, or 12 rather. It shows the cost, relative costs of moving the coal to Hot Springs over a 37 year total, by rail, is 2 billion 221 million, compared to 1 billion 830 million for costs of transmission. In other words, mine-mouth. The difference is 391 million dollars in favor, of course, of the mine-mouth. As far as annual levelized costs are concerned, basically what this amounts to is putting the costs over a period of time into present day dollars. The annual levelized figure for rail, as you can see, is 54 million plus. For mine-mouth, 46 million plus. This is a difference of over 8 million in favor of mine-mouth.

Now page 7, slide, I'd like to show you quickly. It represents graphically the data that appears on 5 and 6 pages of the exhibit. The coal shipment is the upper line, and the transmission is the lower line, and it indicates the variance in costs with, of course, the mine-mouth being much cheaper than the other.

The reasons for the sudden changes, I might mention, you'll notice here, are because in the Department analysis, every five years or so they figured that utilization of the plant would decrease as it gets older. Now that's the reason for that. And as far as the lower line, the sharp jump there relates to a tax depreciation area. I thought I'd mention that because you might wonder why these sudden accelerations.

Now, turning quickly to the Pettibone study, and this is the Pettibone study made by him. He represents Gibbs and Hill, one of the largest companies dealing with energy and utilities, transmission, generation, and so forth, in the country. An in-depth study if there ever was one, this is the green exhibit, number 22, that you all have. He used two generally accepted methods in his approach: present worth and annual cost. His study, and here we're dealing with Table 1, page A-6, and I'm not going into the various details, but the totals indicate that it's unequivocally more economical to generate power at Colstrip and transmit it by transmission rather than using an alternate power generation location at somewhere else. He used three sites here; he used Colstrip, Hot Springs, and Spokane. You will see here the costs at the bottom; as far as Colstrip is concerned, it's a little over one billion. The cost as far as Hot Springs is one billion 334 million. The cost as far as Spokane is one billion 560 million. The differential there is shown at the bottom; what it represents is that Colstrip is favored by 33% over Hot Springs, and by 51% over Spokane. Then when we turn to the annual cost analysis, the table appearing is so long that we didn't attempt even to bring out a slide on it, but it does indicate, once again, that Colstrip is by far the cheapest of the three alternatives. The slide at the last page indicates the average cost per kilowatt hour as well as the annual cost basis. As you can see, Colstrip, the solid line on the energy chart, mills per kilowatt hour, is much below the other two locations, and when we come up above, total annual charge, in millions of dollars, you'll see the bottom line, Colstrip as compared with Spokane and Hot Springs, is much cheaper.

Montana Power, back in 1972, had a study made. It's Exhibit 229. It indicates comparison of costs of transmission of electricity from a generating plant located at Colstrip to various applicants' load centers, with the costs of transmitting coal from Colstrip to a generating plant located at Boardman. And here a freight rate of only six mills per ton mile was used, but even so, the Colstrip generation plant came out much cheaper than the Boardman location.

Another exhibit that I'd like quickly to refer to is Exhibit 232, a historic comparison of generation and resource cost, various locations. This was a GRIT study made by Portland General Electric and introduced through their witness Woodley. The latest study that they made is January of '76 showing a cost comparison study of gas turbines, mine-mouth plant, and nuclear and geothermal. As Woodley testified, except for geothermal dry steam, which has not been found in the state of Oregon, nuclear energy is the lowest, at least to them at their location. The next least costly was Portland General's 20% participation in 3 and 4, which is only 1.21 times as costly as nuc, and next in costliness is the Boardman coal-fired generating plant, which is 1.98 times as costly as nuclear.

So you can see that the studies from all sides indicate that the mine-mouth at Colstrip is the cheapest. And I might mention, in the GRIT study, testified to by Woodley, they used coal in their assumption, purchased from Wyoming, and shipping it to Boardman, rather than from Colstrip, which would cost more.

Socioeconomics. I'm only going to touch this a few minutes at this time. I'll get into it in a little more detail on our rebuttal that we have tomorrow. I would like to hit one or two areas before I get into the specifics later on. There are no specific area-wide statutes or regional land use plans applicable. But the testimony is that the Montana subdivision and platting act is available, has been used, and the people involved in the planning down there feel very optimistic as far as future planning is concerned. Rosebud County hired a planning consulting firm for a comprehensive county planning program: Cummin and Associates out of Billings. I might refer you to the Ken R. White master plan for Colstrip that's been assailed as a poor plan. I think you've been down; you've seen what's happened at Colstrip. I don't need to tell you any more. It does not present the ravaged wasteland that the opposition would like to have you believe. In fact, it is, as some of the expert witnesses indicated, a well-planned, well-developed community. And since the Ken R. White plan joint venture was formed with three Billings' firms who did a lot of work down there in the town of Colstrip, planning, preparing a further plan, over 10 million dollars were spent in the planning down there at the town of Colstrip and immediate vicinity. There are adequate lands available in the future for expansion and recreational facilities, north and west of the present town.

Impacts from 3 and 4 have been testified to by the local planner down there, Cummin, been testified to by outside experts called in. The impacts they foresee are minimal. There are various reasons for it: (1) Any adverse impact from 1 and 2 has already been felt down there. Actually, it caused slight disruption only and the people know what to expect in the future; (2) All expected problems have been identified and corrected during 1 and 2; (3) The number of new residents and students in schools is far less than projected originally; (4) Planning has enabled Colstrip to be, as I've indicated, a pleasant place in which to live; (5) Very few more employees are going to be working on 3 and 4 if it is built than there were on 1 and 2, which indicates that what took care of 1 and 2 should also take care of 3 and 4, provided that proper planning in the future, and the time is available to do it, is done. They are working on that, as you know, right now, based upon the testimony of Cummin and the rest of them. The development in the past has been controlled and the adequate laws and regulations for planning are available. The attitude of Rosebud County officials is good. Their growth management policies look good as far as the future is concerned. And as I've indicated, there's sufficient time left to adequately plan for 3 and 4. No, I know there was an outside expert came in from Oregon to tell us that we needed at least two to four years for more planning down in Colstrip. And all I can do is shake my head. Here's a man that's come down and spent a couple of days here and said, well, you can't do anything for two to four years. Good heavens, if we waited for planners of his caliber, we'd never have anything built in this country, I'm sure of that. Another reason down there is that the tax base has increased, and been increased by 1 and 2. We'll go into that later. And they expect a further increase from 3 and 4. And we do feel that the impact of the taxes upon the community is present as far as helping develop the community now and in the future is concerned. Also, coal development is already in progress for other purposes, 1 and

2, for export and so forth, so really there'll be very little impact caused by 3 and 4 upon the coal development.

I am going to wait for rebuttal to go into a few more details of socioeconomics. This takes care of my general discussion this morning. I might mention this. Tomorrow, May 20th, marks the anniversary date when this hearing commenced. It's almost beyond the realm of human memory to remember when it first commenced one year ago after several postponements. I don't know. Let me ask a rhetorical question. Is it a time for rejoicing, or a time, perhaps, to weep tears. Perhaps it's both. Perhaps rejoicing is in order that the hearing, hopefully, is about over. Perhaps we should shed a few tears over some of the things that have happened during the course of this proceeding, the waste of time, so much of it, the waste of manpower and money. But be that as it may, tomorrow, as I say, marks an anniversary date. Thank you very much.

BY APPLICANTS

By Mr. John Peterson
Attorney for the Applicants

Mrs. Herak and Mr. Chairman, members of the Board, last November 7th and 8th I believe most of you were in attendance at the Board of Health arguments where the parties to that proceeding presented extensive argument regarding the environmental impacts dealing with Colstrip units 3 and 4 pursuant to Section 810-H of the act. That act, of course, required that the duly authorized state and water quality agencies have certified that the proposed facility will not violate state and federally established standards and implementation plans, and that the judgments of the duly authorized air and water quality agencies are conclusive on all questions related to the satisfactions of state and federal air and water quality standards. There is also a section, however, which demands that this Board makes independent findings of all of the criteria set forth in 816 of the act. And 816 of the act is a page and a half of laundry list which details specifically findings required relative to emissions, controls, and standards. That is why we have included in our proposed findings of fact, each one of that criteria.

When we argued before the Board of Health, which is summarized in Volume 51 of the transcript, we broke down, basically, into five areas. Four of those areas were subdivisions of the air quality, and one dealing with water quality, statutes.

With regard to air quality, we at that time argued, and it's still our position today and we feel that the record firmly establishes, that the fuel to be used at the Colstrip units consists of what we call the Rosebud coal from areas C, D, and E. Its sulfur content, its blending, mixing, and leveling aspects of the coal from the mine to the boiler were detailed at that time. And based upon this, a finding was made by the Board of Health in accordance with the proposal that we had submitted to them, that the scrubber inlet will not experience more than 1% sulfur, which is an equivalent to 965 parts per million.

We also detailed to you the plant system, with emphasis on the scrubber unit, the boiler, and the stacks, as an integral part of emission control and air pollution control equipment. We detailed to the Board, therefore, the components of the eight

Venturi scrubber modules which are proposed to be constructed at Colstrip 3 and 4. Exhibit 63, which is shown here on the schematic, is a typical Venturi wet scrubber module. This exhibit was presented and shown at the Board of Health, and it explains how the system is designed to capture and make use of the fly ash in the flue gas, because that fly ash contains an alkaline material which is made up of calcium and magnesium which are absorbing agents for the sulfur dioxide.

We also discussed the particulate removal features of each Venturi and explained to the Board, and the record so shows, that this scrubber module as it's shown here in Exhibit 63 contains in one unit particulate removal device together with an absorber section for sulfur dioxide and flue gas.

The Board of Health found that the emission control system at Colstrip 3 and 4 is best suited for the Colstrip plants because it makes use of the alkalinity nature of the fly ash from the Rosebud coal and thus reduces dependence upon additional lime injection. This is an important criteria because with a lime/limestone system, basically an absorber system, you have increased sludge. With increased sludge you have to have more disposal of that sludge and therefore it does not represent, in our opinion, a minimum impact as does the proposal made for the Colstrip units.

These systems will be operated without a bypass. That is, all of the flue gases will be treated at all times in one of the modules. It cannot go straight from the boiler to the stack. It will be operated in a closed-loop mode, and that is that we will not discharge the effluents, the water effluents, from the scrubber unit into another evaporation pond, which would take a great number of acres. I think the estimate was 2800 to 3000 acres. Or, back into the Yellowstone River, where the water quality of that river would most certainly be changed if we put the sludge waste into the river.

The Board found that it was not relevant to their determination to consider the alternatives to the proposed system, but we have included that subject matter in our proposed finding 94, because under the language of 810-C of the act, the Utility Siting Act, it requires a consideration of the state of available technology, and the nature and economics of the various alternatives.

Exhibit 108A was introduced into evidence and gives to you the estimates of the various capital expenditures which were proposed on the alternatives for Colstrip units 3 and 4. Based upon the technology and the economics, it is the judgment of Bechtel, Montana Power, those engineers who were involved in this project for years, that the most economically feasible, and yet technologically available system for flue gas desulfurization at Colstrip, would be a Venturi scrubber, a model of which you have just seen. You can see here where the estimated Venturi scrubber cost in total capital at the time this exhibit was prepared, was 151 million dollars, as compared to the various alternatives which have been suggested in the record, almost, in many instances, doubling the cost economically. Somewhere down the line there has to be an economic consideration for what can be spent on pollution control equipment because it's the consumer, in the long run, who pays this bill, and when we talk about doubling the expenditures on emission control systems, which is just part of the total plant cost, you're talking about asking that consumer to pay more money for something that we don't think is technologically advisable. This figure of 151 million, I might state, due to the inflation alone since this exhibit was prepared, has now jumped to 175 million, 7 thousand dollars, and that is an exhibit we have introduced relative to increased costs of this plant. I believe it's Exhibit 104.

We also presented in the record, and showed to you in the interest of showing what the comparative costs were for running and operating this system, which is a basis of an economic decision, what the prospective costs would be. We have here the Venturi scrubber, which we proposed, at an annual cost of 1 million 30 thousand dollars. As opposed to this, we had separate systems. That is, a particulate removal device in the form of an electrostatic precipitator, followed then by an adsorber. We find that the operating costs, principally because of line costs, would be almost 3 million 148 thousand to 2 million 420 thousand, or more than double the operating costs per year for flue gas desulfurization system.

Economics, therefore, with technology, is something that this Board must decide, because it is a mandatory feature of the Utility Siting Act. The only evidence in this case, by the way, relative to economics, comes from these exhibits and from the testimony of the witnesses who prepared them. There is no other evidence that it would be cheaper to adapt to a different system, and therefore, if there is a finding contrary to the one that we have proposed, it is our position that it would be based on pure speculation. And of course, it cannot be the duty of this Board, if they feel that the matter can be sustained later on, to base any findings on pure speculation.

Third, we discussed, and it is in the record, relative to the projected emissions at Colstrip from the flue gas desulfurization system. They were discussed in terms of what we call the new source performance standards which were promulgated by the EPA, Environmental Protection Agency, and which have now been adopted by the Board of Health in total, and which will apply to the operation of Colstrip units 3 and 4. In terms of these projection emissions, we have, since the Board of Health arguments, introduced into this record, and I'm sure you've all read it, a table from Dr. Carlton Grimm relative to the tests that were taken by an independent testing agency, a firm of Yapuncich down in Billings, which was suggested by the Department of Health, on the operation of Colstrip unit 1, on February 10th, 11th, 12th, and 13th of this year. Now the reason that that evidence was put in was to test the predictions that we had made in the record before the Board of Health, and indeed, the record which is now before you people, based upon what we anticipated would be the projected emissions because of the pilot plant test data which came into a great deal of scrutiny during the course of the hearings.

We prepared, for the purpose of showing to you the projected emissions and how they compare, and reproduced for you Table D, which was included in Dr. Grimm's testimony, and which is a recapitulation not only of what the report for unit 1 showed in Exhibit 278, the Yapuncich report, but also shows to you a recapitulation of what we predicted based upon the pilot plant. You will see that unit 1, which figures are showing here under number 1, its actual performance. These are the emissions for each pollutant tested: particulate, sulfur dioxide, and oxides of nitrogen. Below this is a figure called the standard. The is the allowable emission rate which EPA and the Montana Board of Health said we can have at Colstrip for each of these units. You will see that for particulate matter, they allow emissions for this particular plant at 339 pounds per hour, whereas in fact, at full load of about 352 megawatts during this test period, we experienced 91.4 pounds per hour, or 73% lower than the standard. You will see that for sulfur dioxide they allow 4,063 pounds per hour of SO_2 to be emitted, whereas in fact, the emission 1,464 pounds per hour, or 63% below the standard. And for oxides of nitrogen, you will see that we experienced full load in unit number 1, the unit which has come into great question as to this unique system, oxides of nitrogen emissions in pounds per hour of 880 pounds, versus an allowable emission for Colstrip of 2,370, and this is also 63% lower than the emission standard.

It's not on this transparency, but it is in the evidence that the particulate removal efficiency for the Colstrip unit 1 during that test period was 99.74%. This is better than any -- this is equal to our maximum projection which we made based upon the pilot plant when we anticipated that we could receive efficiencies of 99.76%.

Number 2 shows what we've projected as emissions for units 1 and 2 based upon the pilot plant, and this is before it went into actual operation. You'll see that we projected particulate matters for an average coal, and I might add during the test run the coal we experienced was about an average of 81%. You'll see that for average coal we projected that we would not emit more than 130 pounds per hour full load. You will see what we emitted here, 91.4, and so on down the line with regard to SO_2 and oxides of nitrogen. Based on worst case conditions, we made a projection of 184, and 2,071 in the worst case conditions for SO_2, and 2,370, which is equivalent to the standard, because we had no experience at the pilot plant as to whether there would be this kind of oxides of nitrogen removal from the scrubber system or the boiler. Then we made the prediction for units 3 and 4 based upon the pilot plant test data, and now we've made a prediction based upon unit 1's experience. We now anticipate that the particulate removal will not exceed in pounds per hour for the particulate for units 3 or 4, 204 pounds per hour, whereas the standard is 757 pounds per hour. For sulfur dioxide we anticipate, based upon the unit number 1 test, 3,274 pounds per hour, whereas the allowable emission is 9,088 pounds per hour. We predict oxides of nitrogen will not exceed a limit of 1,968 pounds per hour, whereas the allowable limit is 5,301 pounds per hour. Below this line of unit 1 in performance are our predictions of what we anticipated we would receive, based upon average and worst coal conditions on the basis of the pilot plant test data.

What we say to you today is that based upon that four day extensive testing period, which was participated in by the Department of Health, our predictions relative to emissions and the control of emissions at Colstrip units 3 and 4 were substantiated. Based upon, therefore, the emissions of all four units, on that unit 1 test data, we anticipate, in tons per year, emissions of SO_2 at 41,502 tons, as opposed to an allowable new source performance standard emission of 115,000 tons. We predict oxides of nitrogen will not exceed 24,948 tons per year, as opposed to an allowable standard of 67,198 for all four units. We predict that particulate emissions will not exceed 2,588 tons per year, as opposed to an allowable standard of 9,602 tons per year. There is no standard on fluorides, and our prediction relative to that is 22.8 tons per year, which we base upon coal analysis and the percentage of removal there of approximately 92%.

MR. WEEDING: Jack, can I ask a question on that? Do you have the figures on the SO_2 removal efficiency based on the foregoing?

MR. PETERSON: Yes, sir. Based upon the calculations made by Dr. Grimm, to which he testified and which he analyzed himself, his emissions were, on removal efficiency, at 75%. That's a total sulfur into the plant, as opposed to total sulfur removed.

DR. CLARK: How about the nitrogen oxides?

MR. PETERSON: The percentage of removal for oxides? I don't have that, Doctor; I'll see if I can get that from the test data. I think that could be computed.

Mr. Peterson (continuing)

Now when we discussed emission data with the Board of Health and as the evidence developed during the course of this hearing, we told our modeling expert that he was to compute the ground level concentrations, that is, compute what the ambient air standards would be on the basis of an emission rate of 1,690 grams per second for all four units. This is a figure that's plugged into the model in order to make the mathematics and make the predictions. Needless to say, if we use the unit 1 results now, that 1,690 grams is reduced proportionately. Mathematically it comes down to about 1,330 grams per second, and I'm about to show you what the ground level concentrations are for the units based upon, however, the 1,690 grams per second, which is higher than we would experience, we believe, based upon the unit 1 tests.

Before the Board of Health, in the record, in the transcripts, the Board of Health made findings, numbers 24 and 25, in which they detailed our proposed findings relative to anticipated ground level concentrations. They also stated that all applicable standards would be met. Now the transparency which I have placed upon the screen here is based upon those findings of the Board of Health as proposed by us and substantiated by the evidence.

The important thing is that it's critical to remember that it is the effect of the ground level concentrations, rather than the emissions, which causes injury or damage to human health and welfare, and therefore it's important to know what those concentrations are going to be.

I think I ought to digress for a moment to discuss with you, first of all, the standards which are applicable to the ambient air in Montana. This, of course, is not a standards hearing. You are not here to change any standards that have been legally promulgated by other agencies under their jurisdiction. You are really not at liberty to do so on the basis of the facts and the evidence and the law. What you must do, in our opinion, is to apply those standards, because the siting act itself makes note of that. It's a mandatory finding that you have to have.

Why are the standards in effect in Montana? Well, the simple answer is that they're in effect to protect the public health and welfare. Now, public welfare is defined and includes the protection of vegetation, soil, water, animals, wildlife, and the like. The federal primary standards which were adopted protect public health, human health, and so do the Montana standards. And in many cases, the Montana standards are more stringent, the Montana ambient air standard is more stringent, than the federal. The federal standards were specifically enacted by law, under the Clean Air Act, with a margin of safety built in, and that is, concentrations below such standards would not affect human health.

Now I make these comments because, to the applicants in this case, the standards relate directly to minimum adverse environmental impact. If we meet the standards as the Board of Health found that we would, then certainly it is our position, no adverse affect can occur on human health or welfare. That is an objective test. It doesn't leave it for speculation, and it doesn't leave it to the whim or caprice of any Board member.

The transparency which is on the screen now is a listing of the projected ground level concentrations for units 1 through 4, and in some instances, units 3 and 4 alone. It shows the extreme margin of safety that we have nominally built into the standards already, but we have because we're so far below those standards. For example, for the one hour sampling period for sulfur dioxide, we predicted, based upon two different mathematical calculations, ground level concentrations of 156 to 405 micrograms per cubic meter. That is the concentration. That's for all four units. The only standard that's in effect is the one hour Montana standard which allows a ground level concentration for once every four days at the same spot of 654 micrograms per cubic meter. Depending upon which mathematical computation you take, this means that we are 38 to 76% below the applicable standard. For the three hour federal period, we predict ground level concentrations for all four units of 156 to 194 micrograms per cubic meter. The standard is 1,300. This means that we are 85 to 88% within that standard, below it. For the twenty-four hour period of sulfur dioxide, for all four units, it is 63 micrograms per cubic meter, whereas the standard in Montana, the most stringent standard -- there is a federal standard that is higher than this -- is 262 micrograms per cubic meter, or 76% below the standard.

DR. CLARK: 262 is state?

MR. PETERSON: State, yes, sir.

Mr. Peterson (continuing)

For the annual standard, which in many respects, according to the testimony and some of the assertions made, is the manner in which you have chronic injury develop in vegetation, we predict ground level concentrations at a peak maximum will not exceed for all four units, 1.4 micrograms per cubic meter. The standard in Montana is 52. The federal standard is 80 micrograms per cubic meter. That means that we are 97% below the annual standard of Montana which is the most stringent standard. For units 3 and 4, because they are important in the significant deterioration criteria, we predict a ground level concentration of .9 micrograms per cubic meter, and the standard, once again, is 52 for the annual period, and that brings us 98% below the standard.

So, as we go through each one of these pollutants, and I might state that we detailed this transparency to you in our comments on the opponents' findings, whereby all of these figures and the percentages are set forth. As we go through each one of the pollutants for particulate matter, for oxides of nitrogen, for sulfates, for fluorides, for beryllium, for lead, together with the significant deterioration standards which apply only to 3 and 4, you will see that we range anywhere from 95 to 99% below each of the applicable standards, with the exception of the twenty-four hour standard for SO_2 for 3 and 4, which leaves us at 40 micrograms per cubic meter versus a standard of 100, or 60% below that standard.

No witness, no witness for the opposition in this case made any predictions of damage to human health or human welfare, or public welfare rather, based upon these ground level concentrations. Our witness relative to human health, who described the manner in which the standards were set federally, stated that no adverse effects will occur by reason of the operation of Colstrip units 3 and 4 or 1 and 2 to any human in that area. He explained, for example, Dr. Colucci, that there'd be no scientific basis, therefore, to deny our application because of danger to human health; he explained that since the Montana standard is more stringent, based upon the data gathered by EPA when they set the standard, the margin of safety set in, the strongest evidence showed that there was a margin of safety approaching the federal twenty-four hour SO_2 standard of 365, whereas Montana's is 262, and that therefore, not only are the federal standards reasonable at this time based upon the evidence, but the Montana standards are even more than reasonable.

Dr. Edmonds, who is the manager of terrestrial systems for

Westinghouse, took the ground level concentrations, the peaks, the maximums that we have shown here, and made an analysis of what would happen to the vegetation, the soil, the wildlife in the area, that is, the public welfare; he examined over 130 pertinent publications in his analysis; he's been at the Colstrip area 25 or 30 times; he contacted and had conferences with individuals knowledgeable in the field; and he testified that the gaseous emissions which could affect the vegetation, wildlife, domestic animals, first of all depend on many factors. It's not just a simple matter. You have to determine period of exposure, humidity, soil condition, light intensity, time of day, development time of the plant or species, and the particular species. But suffice it to say, he considered these maximum ground level concentrations for SO_2, particulate matter, fluorides, oxides of nitrogen, and 10 trace elements, such as mercury, selenium, arsenic, cadmium, lead, beryllium, and concluded that the gaseous and particulate deposition of trace elements at Colstrip, and from these plants, will not adversely affect vegetation, fauna, soils, and the like.

There will be constant monitoring of the emissions in the ground level concentrations at Colstrip. We have devised and implemented a network of monitoring sites which are shown on our Exhibits 112, all done in accordance with EPA testing methods. This continuous monitoring, monitors are connected to our control room. There are two types, basically: primary and secondary. Primary deals with sulfur dioxide, oxides of nitrogen, suspended particulates, and the secondary with dust fall jars for particulate matter, fluorides, and sulfation plates. Based upon those constant monitorings for the predictions on both Colstrip 3 and 4, and monitoring is one of the criteria you have to find in making your findings, we have set, therefore, a network to check the predictions and to make sure that the ground level concentrations do not exceed, at any cost, the standards which are applicable to Colstrip units.

That is why we say that based upon the testimony of the witnesses and the credible evidence, and based upon the monitoring system which applies to Colstrip, and based upon the fact that the projected concentrations and emissions are so far below even the standards, that minimum adverse impact will occur, and no greater than that will occur. This is because we have the most economic technical system that is devised for Colstrip, which can be constructed and operated at Colstrip, Montana.

We discussed also with the Board of Health, and it is in the record, matters dealing with water quality. As a review of some of the areas which you have examined, which you have seen, this is, of course, a panoramic view of the area showing the withdrawal of water from Nichols from the Yellowstone River, pipelined to the surge ponds in this area. These are the actual flow of the ponds from the plant where the sludge is taken from the scrubber unit. This is a temporary retention pond. This is a future ash disposal pond, and these are the plants. The water comes from the Yellowstone River from a pumping station into the surge ponds, from the surge ponds into the clarifier, into the plant for three basic purposes: steam, cooling towers, scrubbers. It is used in the plant and is deposited in various sources.

When I talk about cooling towers, one of the other findings that you have to make with regard to cooling towers, which was not addressed by the Department of Health relative to the standards, the Board of Health relative to the standards, is the alternatives that we considered for cooling towers. The evidence shows that we've considered all of these alternatives. The once-through cooling, which is a discard system; the cooling ponds; the spray ponds; dry towers; wet-dry towers; dry towers with a pond combination; the natural draft evaporative towers; and the mechanical draft evaporative towers, which have been selected for Colstrip as being most economical and ecologically advisable.

Now with regard to water quality, its quantity, and the effects. A number of witnesses testified relative to the matter for the applicants: Mr. Berube, Dr. Grimm, Mr. Labrie, Mr. McMillan from Bechtel Corporation, Frank Dunkle, and Chadwick Martins. As I told you before, we have devised for Colstrip a closed-loop system relative to the scrubber system. If we had an open loop, it would take about 3,000 acres of evaporation ponds in that area if we could evaporate the sludge water. Or, of course, we could turn it back into the Yellowstone. What we selected to do is to construct ash disposal or sludge ponds in the area, in a three-stage sequence. The first stage is here and is presently under construction for units 1 and 2. It is constructed in such a manner that if the area is first drilled to determine permeability of soil and so forth, those areas which are found porous will be blanketed or graveled. The dam area is constructed on a concrete base and then filled. The purpose, of course, is to avoid seepage. That was Bechtel's assignment when they took this job to minimize all seepage because the quality of the sludge water could affect the quality of the ground water at Colstrip.

We're cognizant of the fact. The fact of the matter is that analysis of the ground water at Colstrip shows that it is poor quality, but that doesn't mean it should be made any poorer.

And so we've got to control anything that comes out of the sludge pond. It must, therefore, be retained. We feel that based upon the engineering data that we have, and which is continuing, and the construction methods which will be employed, which will be in accordance with good engineering practices, that the seepage from these sludge ponds will be minimal. For example, our evidence shows that for the first stage, the seepage from the rims are eight or three gallons per minute, and the seepage from the dam area will not exceed 68 gallons per minute. Dr. Grimm made a chemical analysis based upon the sludge that we had at the pilot plant to see how it compared with the ground water at Colstrip, and whether or not this would have any impact in changing the quality, and his testimony in the record is that it will not change the quality of the ground water, that is, these seepage rates.

The ash disposal ponds do not discharge any surface water. The only problem we would ever have is seepage into the ground water.

With regard to the storage pond, or the surge pond, this pond is constructed right here. I think it's around 147 acres. It has been built for holding about a billion gallons of water. For units 1, 2, 3, and 4 this constitutes 19 day storage in the summertime, and 26 day storage in the wintertime.

Our engineers, and our testimony is that, based upon the historic flows in the Yellowstone, that this is suitable, that this is adequate. Now the Board of Health has put operating conditions upon units 3 and 4, and that is that we will not be allowed to withdraw from the Yellowstone River when the flow at Nichols is 1500 cfs, cubic feet per second, or less. The maximum withdrawal that would be required for units 3 and 4, which is the application pending before you, is 35 cubic feet per second. For all four units it's 56 in the summertime and 43 in the wintertime. The withdrawal at the time when the water is at 1500 cfs will not have any significant affect upon the river. In fact, if we withdraw 35 cfs at that time, it would not even be detectable.

Mr. Martin from Ecological Consulting Services, a biologist, testified that in taking examples from December of 1974, January of '75, and February of '75, of the flows of the Yellowstone, there was a natural change of cfs from 234 to 867 in January, to 552. This is a natural change in cubic feet per second. Therefore, he concluded that taking 35 as opposed to what is already occurring naturally, would not show any detectable difference in the flow or have any significant affect upon fish or wildlife.

Mr. Dunkle testified in the Board of Health hearing, and the transcripts are before you in this hearing, that based upon an estimate of 59 cubic feet per second, it would be insignificant to the flows of the Yellowstone. It would not affect the concentrations of dissolved solids, sediments, fish, wildlife, and irrigation. His estimate was that the water surface from that withdrawal would be less than one inch and the width of the Yellowstone decreased less than one foot, and that the flow at

Miles City would decrease about .6 of one-half percent, .6 of one percent.

Mr. Willems from the Department of Health stated that the impact on water quality of the Yellowstone because of the proposed withdrawal would be insignificant.

As to the river flows, Mr. Gibbs of the Bureau of Reclamation, I believe it is, in their water study, which is Exhibit 165, indicates that the average annual flow at Nichols is from 9,000 to 11,000 cubic feet per second, and that the unconsumed water as of 1970, which is also applicable today, where the Big Horn joins the Yellowstone, for future needs, unconsumed, is 2 million 500 thousand acre feet annually.

We do not feel that there is any credible evidence in this record that the withdrawal will adversely affect irrigation downstream, fish, wildlife, or any of the fauna which use the Yellowstone. There's been a lot of speculation, a lot of may's, if's, and's, or but's, but nothing concrete. In fact, Mr. Gibbs noted that in the last five years the figures show that about 20,000 acre feet of irrigation have been added in the Yellowstone Basin, and this diverts 60 to 70,000 acre feet of water per year, and this is only a small fraction of the total water available as far as historic stream flows are concerned.

One of the matters dealing with the water resources that will be utilized in the Colstrip units is the question of whether or not when the Board of Natural Resources, at the suggestion of the Department, required that this surge pond contain 50 days of storage for units 1 and 2. The evidence from our engineers is that we can live, based upon the historic flows and the withdrawals that we'll have to make, on much less than that, the figures which I just related to you, 19 days and 26 days, and that's what we think the record shows in this case, and that is what we assert the evidence is on which you have to make your findings.

Now we did ask Mr. Labrie to testify, and he did so testify, as to alternatives to increase that storage pond up to 50 days supply, or to have alternatives for 50 days supply. The record shows that the Montana Power Company has an option, in the basis of a contract, which provides that we can withdraw from the Tongue River Reservoir, 4,175 acre feet per year of water, at our option, at a cost of $25.00 per acre foot. If we were to use this water, it would provide about 33 days of supply, an equivalent of 33 days of supply to Colstrip. In addition to that, the existing surge pond would give 18 days, or 19 days, for a total of approximately 51 days supply, based upon those two alternatives, the surge pond and the Tongue River Reservoir. If we were to use this option, we would propose to release it from the reservoir to supplement the flow of the Yellowstone River downstream from Miles City at a time when the flow in the river was low, and this we would continue, and then we would continue to withdraw the water from the Yellowstone at Nichols through the pumping station. If this option is exercised, it would cost approximately $104,000.00 a year, per year, in operating costs, as an alternative.

I would repeat, however, that based on the evidence, we feel it is reasonable that the surge pond which we have constructed on the 160 acres provides sufficient storage capacity to insulate any detriment to the Yellowstone River in a low flow period.

One other aspect which I would like to discuss with regard to the record, is that dealing with transmission lines. We proposed two parallel 500 KV transmission lines from Colstrip to Hot Springs, Montana to carry the generation from units 1 through 4. There is in evidence, Applicants' Exhibit number 92, which shows the general line route, together with other alternatives that were studied in a 36,000 square mile area. We propose a right of way of 300 feet wide to carry these two parallel transmission lines. We have selected a two mile corridor which allows the centerline to be adjusted to accommodate local or specific conditions.

Of course, the Board has continuing jurisdiction under its regulations relative to the exact location of the centerline as construction progresses, that is, within the preferred corridor. The regulation states that, and I know you're familiar with it in its implementation for the Broadview to Colstrip line, that a utility may not commence construction of the transmission line without having obtained the Board's approval of its exact location.

When this line was routed, and before the routing was finally selected as to the preferred corridor, a great deal of time and effort was spent as to what was the best. An example of that, I think, is shown in Exhibit 98. I have but one page of that multi-page exhibit, which is mosaic pictures, photographs, aerial photographs, taken by C.T. Main through Teledyne Geotronics, Long Beach, California, in which they photographed the centerline of the route from Colstrip to Hot Springs. This is an example of how they picked the centerline in the two mile preferred corridor. It was explained by Mr. Zobel that they would go into the fields, mark the spots, determine the topography, and then have the line flown for the pictures. From those mosaics they would then plot the centerline all the way across Montana, look at the areas which they felt were sensitive, try to adjust it, and therefore come up with the minimum impact as far as that line is concerned. Those mosaics are in evidence for the entire line. This is a centerline, of course, which as construction progresses, is subject to changes in that corridor, and which we feel is a reasonable routing of this line based upon the economics. The line is projected to cost, with the substations, approximately 214 million dollars.

In the study of the transmission and the system and the lines which are to be constructed as proposed by the applicants, a number of studies were made by C.T. Main Company, which was the engineering firm hired by the Montana Power and the applicants to do the study. They looked at tower design and they decided that they would have three basic configurations of towers, which are -- some of which you can see in the Colstrip line. This is called the steel tower type, which is guy towers, tensile base with guy towers running from each side. That's Exhibit 70. We also have free-standing towers which are constructed in fields, such as is shown in Exhibit 71.

Now the purpose, of course, of doing the research relative to the towers is to make certain that they will withstand the strength of the lines. These towers have undergone extensive testing. We have in this record, Exhibit 78-A, B, and C, which are reports of tower testing done by the American Bridge Division of the United States Steel Company, and by C.T. Main, to substantiate whether or not the conceptual design of the towers meets and is suitable for construction in the Colstrip area. There will be approximately four tower structures per mile, or approximately 3300 towers constructed.

The area that will be used for towers, from Exhibit 71, that is, the free-standing towers, the agricultural ground that will be withdrawn from production by the construction of these towers, approximates 10.43 acres. If we use only guyed towers, it approximates 5.69 acres lost to production for the entire line. This is based upon 1100 square foot free-standing tower, and 600 square feet as guyed tower, which diagram is shown in Exhibit 99, which is a computation made by Mr. Zobel from C. T. Main as to the amount of acreage withdrawn from production in agricultural land by reason of the installation of these towers. And his computation was made based upon the aerial photographs and the study of the line route.

DR. CLARK: On these guy towers, I presume that the areas included out to the corners of where the guy wires are anchored?

MR. PETERSON: They are not. And that is one of the differences in the calculations made between Westinghouse and C. T. Main. Mr. Zobel contends that the area within the guy towers is perfectly suitable for production, and he did not include that acreage. It's not included in the 600 feet.

DR. CLARK: Relative to hazards to farming and equipment from those guy wires, it was not clear whether or not your company included the area out to the corners of where the guy wires were.

MR. PETERSON: I think the testimony from Mr. Zobel is that, based upon the position of the guy wires from the towers, that the area within here, which is typically lost based upon safety requirements, is about 600 square feet.

MR. BERTSCHE: On page 71, line 13, Zobel says that the construction of the long span envisioned four structures per mile, and then he talks about how the visual -- isn't that a mistake to go into -- if you're going to run two 500 KV lines, it looks to me you've got to have a minimum of seven structures per mile.

MR. PETERSON: Approximately four structures per mile, and that's a circuit mile. That's per line.

MR. BERTSCHE: So then you're talking about running two lines, so there would be seven structures per mile.

MR. PETERSON: There's approximately eight per mile and that's how we come up to the total of 3300 towers.

MR. BERTSCHE: A maximum of eight, it could be seven, but I mean, he says on page 71, line 13, there are four structures per mile.

MR. PETERSON: That's circuit miles. That's per line.

MR. BERTSCHE: He doesn't explain that.

MR. PETERSON: You're correct. If you total it up, 436 miles approximately at eight per mile, you get around 3300 towers, structures which we propose to construct.

MR. BERTSCHE: May I ask you a question about your surge pond?

MR. PETERSON: You may.

MR. BERTSCHE: In your testimony, you talked about -- that I read -- you talked about 112 gallons seepage?

MR. PETERSON: Yes, sir.

MR. BERTSCHE: I was down there last Wednesday. Your man took me around and he had seven feet more to fill the pond and he said at the present time the seepage is 400 gallons per minute. Are you having trouble with that dam, and he said --

MR. PETERSON: Yes, there have been instances, according to my knowledge where the seepage has approximated 500 gallons per minute. That is why they went in and started to grout.

MR. BERTSCHE: Well, they've already grouted around there; when I was there they were sinking a galvanized sump down below.

MR. PETERSON: Now they're going to put in, as I understand it, observation wells and temporary receptacles, or receptacles for the purpose of catching the ground water, and I anticipate, pumping it back into the reservoir.

MR. BERTSCHE: You still have seven feet more to go, so there's going to be more pressure against that.

MR. PETERSON: It is not filled yet, as I understand it.

MR. BERTSCHE: There'll be more pressure against that, so I was surprised to hear you losing that much.

MR. PETERSON: The seepage of this water relative to affecting water quality, it will not affect the water quality in the area, because it's Yellowstone River water. However, it is a seepage, according to some of the ranchers in the area, that could increase the flow of Armell's Creek. I believe it might double the flow, and the problem there is whether or not it causes a marsh condition, or a condition which they have not been accustomed to in their ranching operations, so that we believe that we have to control any seepage out of there, not to exceed 112 gallons per minute. We'll have to take steps to make certain that that's done.

MR. BERTSCHE: What worried me is you're off five times on the seepage from the surge pond. What about your other ponds?

MR. PETERSON: There's a different engineering principle that applies to the ash disposal pond, whereby the permeability of the soil is tested and that pond is blanketed with clay soils in the areas, course areas. We do not anticipate that there will be seepage of that magnitude from the ash disposal ponds. In addition to this, there is engineered, and it's shown on Applicants' Exhibit 175, a collection system around that ash disposal pond, which in the event of excess seepage, will fill those wells, and those wells would then be drained by pumps back into the ash disposal ponds.

MR. BERTSCHE: That's the wells they were drilling when we were out either Wednesday or Thursday. There were eight or nine wells around there.

MR. PETERSON: They are under construction now, sir.

DR. CLARK: Well, the seepage isn't really so much with the holding pond as with the sludge pond.

MR. PETERSON: That's right.

DR. CLARK: How successful have you been in actually sealing this?

MR. PETERSON: How successful?

DR. CLARK: Yes.

MR. PETERSON: The pond had not been in operation at all.

DR. CLARK: I can appreciate that. So you can't really tell?

MR. PETERSON: The rejection ponds which are adjacent to the plant are lined with a different material than we are using in the large ash disposal pond. We think that good engineering practice will dictate that the blanketing of the level of the bottom of the ash disposal pond, together with proper construction at the dam site, which has been done, and with this well collection system, will avoid any seepage into the groundwater.

DR. CLARK: The problem out of your holding pond is only a matter of thousandths on scales of water quality as compared to water quantity. Sludge seepage would be water quality.

MR. PETERSON: Right. One other aspect of this as far as seepage is concerned, the figures I gave you are estimates based upon that sludge pond being full. Now that sludge pond is going to be built up over a period of six years, and so there won't be as much pressure against that pond from the sludge. It won't be filled until the six year period.

DR. CLARK: To what extent does the sludge itself seal the pond as with respect to the greater sludge?

MR. PETERSON: None. It will ultimately harden because of the evaporation of the water.

DR. CLARK: What I mean is, you've lined it with bentonite or something of this sort --

MR. PETERSON: I don't know of any bentonite that's being used in the area. I believe there is some --

MR. BERTSCHE: Your boiler, when we went down there, was working at 66 2/3 capacity, according to your man, and I noticed on top of one of your scrubbers you had a makeshift system for your nozzles. Are you experimenting with new nozzles or something?

MR. PETERSON: Yes.

MR. BERTSCHE: They had a rubber pipe across there and four or five new nozzles put in there. What's the reason for that?

MR. PETERSON: There has been a buildup at the wet-dry interface system, that is, when the flue gas first hits the scrubber unit, a solid buildup, which is manageable, just a maintenance problem, which we think can be corrected with different nozzle systems. That's what they're going through now.

MR. BERTSCHE: In reading your pilot study, you tried umpteen number nozzles. Now what kind are you trying?

MR. PETERSON: I don't know but I'll find out over the lunch hour.

MR. BERTSCHE: Okay.

Mr. Peterson (continuing)

Let me go through a few more aspects relative to transmission and basically describe its components, together with some stats. Now this line that we have proposed will be strung so that the midspan clearance, average midspan clearance at the lowest point, will be 37 feet, except at railroad crossings or road crossings where it will be 41 feet. The minimum distances from the line to the ground were selected based on studies as to the safe level from the induced current to people and objects below the line. There have been a number of studies done by C.T. Main which show that what we anticipate for an induced current will be well below an acceptable safe standard, which they estimate to be at five milliamps. For most vehicles under the line, according to Mr. Ender, the induced current will be below one milliamp, and no observer or person will be able to notice the current at that effect.

Now routinely, where fences parallel the line, they will be grounded every 100 feet, and all building which may be subject to induced current, according to where the line is located, which approaches this five milliamp area, will be handled on a case to case basis for grounding, as a safety precaution.

The field effects, of course, from transmission lines, are basically three in nature: electrostatic, electromagnetic, and corona related effects. The electrostatic effects are observed in the form of small currents which may be produced on a conducting object such as a vehicle below the line. As a general rule, an observer touching a conducting object beneath the line will not be able to notice the current. Corona related effects are manifested by such things as audible noise, in foul weather only, a crackling or humming sound, and in some cases can interfere with radio and TV reception. As one leaves the right of way, that is, as one gets further away from the edge of the right of way, audible noise decreases very rapidly. So based upon the estimates by C.T. Main, and their knowledge of the corona effects from their study of the Colstrip line, they are very confident that all of the corona related effects are within acceptable limits. They are safe and present no problem. No witness from any of the opponents testified to the contrary in this proceeding.

And as far as other effects relative to harmful effects on the general public, Mr. Ender testified that in terms, in those terms, "I know of no harmful effects that EHV (extra high voltage) lines have imposed on the general public." We selected as part of the line design a conductor system known as the mallard conductor. It was selected and considers the tower size, span length, wind and ice loading, costs, corona related effects, and the like.

There was an original selection of an ingret conductor but because of difficulty in manufacturing, the mallard was substituted, but the substitution of the mallard not only met the strength requirements of the original conductor, but because it's somewhat larger in diameter, it has less noise effect, and therefore will have better performance.

Now we feel that the record also shows that there will be no violation because of the transmission line operations of the photochemical standard, or ozone standard, which occurs from the operation of the switching stations or the lines. There have been studies in which they attempted to measure ozone produced by corona from transmission lines. It could not be measured under field conditions due to the minute amounts produced and its rapid dispersal in the ambient air. In other words, the conclusion of the literature and the testimony of our witnesses is that there are no, or will be no, measureable additions to the ambient ozone levels because of the transmission line operations.

The lines are designed and will be constructed to withstand two inches of radial ice with no wind, or 120 mile per hour winds with no ice. There are a number of variable conditions which are also within the design criteria. For example, we have a design for 1 1/4 radial ice with 40 mile an hour winds, or one inch radial ice with 60 mile per hour winds. The conceptual designs that were selected for this purpose were done by C.T. Main based upon their meteorological research, a 50 year plan and a 25 year plan, and also on an analysis of six specific sites made by Meteorology Research, Inc., MRI, which report is in this record. They went out and selected six sites along the line route where they thought they might anticipate some difficulties because of the mountainous areas and so forth. They did one winter study. We propose, upon certification, to do another study for another winter, as suggested by MRI, and there is time to do this, and if we run into some different meteorological conditions at these specific locations, not the general line locations, but at these specific locations, the line design can be strengthened, or the line centerline can be moved within the two mile corridor to accommodate these anticipated adverse conditions.

I might state, as far as ice and wind are concerned, that based upon studies from C.T. Main, this Colstrip transmission line is designed for more ice and more wind than any line in Montana.

The greatest impact, I think, from the transmission line is an obvious one, and that is its aesthetic value. It's an impact to those that view it. We feel that studies have been introduced, particularly dealing with the affects on wildlife, and some of the photos that we've gotten relative to effects on agriculture, show that these animals can live with these lines and that they will not interfere, basically, with the ranching operation. Most of the routing has been selected so as to avoid any national wilderness area or any wildlife preserve.

The consideration for agriculture relative to sprinkler irrigation, which can be affected by placing of stationary towers in the fields, can be lessened and mitigated, and even eliminated in many respects, by proper line location made in conjunction with the landowner. And that decision can take place on a case by case basis.

With regard to the construction of the lines, the physical environment presents the most severe problem, and that is one of erosion. To minimize erosion problems, there will be included in the bid tactics to the contractor such things as providing for cross ditches, controlling the manner in which access roads are built, the ways that cuts are made, the piling of dirt, and so forth, to avoid channeling of the water, or rechanneling of the water in areas, to prevent erosion. It can be minimized, therefore, by proper construction practices. After these lines are constructed, post-construction practices which will return the vegetation which has been temporarily disturbed along the line can be implemented and will be implemented, and can and should probably be a condition upon which these lines are constructed and operated. The practices of construction will include how construction camps are run, elements of public safety, access roads, stream beds, what do you do with fences and cattle guards, minimize or eliminate the destruction or any implication dealing with archaeological sites as they are found along the line route, all of which would have to be reported before this Board finally gives approval for the centerline, as it progresses. Waste disposal, a prohibition against the use of any herbicides, and then cleanup and road closures. All of this was detailed by Mr. Zobel who's been in the construction of transmission line business for many, many years.

The final routing, that is, the preferred corridor, out of this 36,000 square miles, is about 426 to 430 miles in length. It crosses -- 70 of which crosses mountainous areas. According to the study, less than 100 miles are considered to have any problems with regard to erosion, and these can be minimized on a local basis, and in many instances eliminated.

The analysis and decision relative to the line, we feel, has produced an environmentally acceptable route, with minimum and acceptable impact, and with firm demands upon construction practices, which this Board could make, and which the Montana Power and the applicants will make on the contractors, and utilization of post-construction practices by the applicants. The landowners along the line shall be reasonably treated and the impacts therefore minimally affect them.

MR. BERTSCHE: On page 73, again, on your number 144, and reading through your testimony, you talk about playing baseball under a 5 KV line and it not bothering them --

MR. PETERSON: Are you in Volume 44 with Couture's testimony?

MR. BERTSCHE: Pardon?

MR. PETERSON: Couture's testimony?

MR. BERTSCHE: Wilkinson's testimony on number 144. He talks about the electrostatic and electromagnetic effects. They studied 500 KV lines. The question that comes to my mind is we now have two 500 KV lines that I could be farming under or playing under. Is there any accumulative effect, which I don't know anything about, of having two 500 KV lines 30 or 40 or 50 feet apart?

MR. PETERSON: No. And the analysis that was made by C.T. Main included the analysis for both lines, parallel lines, and the effects of those two 500 parallel lines upon any cattle, wildlife, or humans, and those studies, which are in the record, and there are a number of them under Exhibits 91-A, B, C, and so forth. C.T. Main concluded that based upon their study of these particular lines themselves --

MR. BERTSCHE: Of the two lines?

MR. PETERSON: -- of the two lines, there will not be any adverse effects.

MR. BERTSCHE: Most of your testimony in here talks about one.

MR. PETERSON: We are fully cognizant of the facts and that there will be two lines parallel to each other.

DR. CLARK: You might recall, Jack, Westinghouse report, when it first came out --

MR. PETERSON: I don't recall that. I wasn't on the case at the time.

DR. CLARK: Eight years ago. You might recall that when the Westinghouse report came out, I think it was late in '73 or early in '74, the state Board of Natural Resources was asked to look it over. You might recall that I submitted a very lengthy document dated February 19, 1974, relative to what I felt were the deficiencies of the process of selection of the line location.

MR. PETERSON: That had to do with cost benefit ratios?

DR. CLARK: No. It was relative to the environmental effects. The normalizing process that Westinghouse used versus the environmental index that is used by a number of other outfits. I submitted that to two of the Westinghouse people, and also Carl Anderson of your shop, and wrote another report on April 2 of that year that retracted a few of the statements that I had made, but did not retract the basic contentions that I had had with respect to the site selection. Volume 19, pages 3182 to 3186, the discussion of this relative to Wahlquist and Beisel's and Carl Anderson's conversations with me, and the record indicates here, in stating that I retracted my total complaint; that is not correct. I was quite surprised to find in the hearing record, of these hearings, that there was technically nothing said about the process of actual route selection. It was touched on here and there. Neither the applicants nor the opponents really spent an appreciable amount of time on it, on the process. It further disturbs me that the fact that several of the consultants that Westinghouse used, subsequently showed up in their table of contents as consultants. There was an implication that their input was there, and yet several of the consultants, I'm thinking particularly of Wirth Associates, were very, very unhappy, and there's been correspondence on that, with the way Westinghouse disregarded the data that they submitted. I don't know where the answer lies in this, but I'm still pretty unhappy about the mode of selection of the corridor. I don't think it was accurately addressed within the area.

MR. PETERSON: Well, the testimony in the record from Dr. Wahlquist details the manner in which the route was selected, the analysis that was made relative to fish, wildlife, mountainous routes, and so forth, and he detailed in his testimony -- I don't know what volume it is, I'd say it was Volume 21, but maybe it is 19 -- how many miles were going across mountains and how many were going across hay and meadow lands, and so forth.

DR. CLARK: And he was referring to the Westinghouse Report.

MR. PETERSON: Basically, yes.

DR. CLARK: He didn't really address -- (Inaudible) -- a suitable process.

MR. PETERSON: I think as far as the preferred route is concerned, it being a two mile corridor, they have selected what they consider to be the best route across Montana. If there is to be an adjustment within that two mile corridor for a specific location of the tower line in order to minimize any adverse impacts for landowners and so forth, then of course that can be done by this Board at that time. Further than that, this line trangresses national forest lands, for which we will have to have a permit, and the lead agency, BLM, will set forth certain guidelines relative to that. It goes into Indian treaty lands in the western part of Montana, for which, I'm sure, we're going to have to have conditions put on it at that time, and so I think as far as the exact line location is concerned, within that corridor, it'd still have to be done with the approval of this Board, and I think that as those specifics come up on a two or three mile section, that this Board is probably going to have the ultimate say, in conjunction with the Department and the applicants as to where it's exactly located.

MR. DAVIS: It's time for recess. Are there any questions?

MR. SABOL: Mr. Peterson, what is your assessment of the facts in the record with regard to the effect of the transmission lines and the towers on property values?

MR. PETERSON: Some of the testimony from some of the realtors for the opponents was that it would depreciate values. They admitted on cross-examination, I think it was Mr. Brunner, that he understands and acknowledges that there is a difference of opinion between real estate appraisers as to the effects of transmission lines upon landowners. I would say this, that as you know, when this transmission line transgresses any private property, and that landowner does not willingly sell that right of way to the applicants, he is subject to a proceeding in which he can be, and will be, adequately represented with regard to counsel in a condemnation proceeding, and it will be up to the jury, or the judge, as the case may be, to set fair and reasonable compensation. There has been a turnabout in the Montana law just recently relative to what that compensation base should be. The effect of that decision, Woolf v. Montana Power, will raise, will raise the cost to the landowners in condemnation proceedings by the applicants, as to what they will receive, in my opinion. However, the circumstances for each particular landowner may vary. I would say also that the record shows that from the Colstrip to Broadview line, out of the 52 landowners involved in that construction, and in the acquisition of the right of way for that construction, 48 of them came to willing agreement with the Montana Power Company and Puget for the transmission line passing their property. Some people, and it has to be taken on an individual case basis, value their property in a different light than others, and so to say as a general rule what the effect would be, I think is going to depend on what individual we're talking about.

MRS. HERAK: In the Colstrip, on this one line, did you pay on a yearly basis, or --

MR. PETERSON: No leases.

MRS. HERAK: -- on a flat rate?

MR. PETERSON: No, Mrs. Herak, the compensation was paid lump sum and includes a reasonable value for the compensation that was agreed between the property owner and the applicants. There is a formula set by the applicants at so much per foot, and there is no lease, that is, use lease, on a year to year basis.

MRS. HERAK: Yet they do have the same problem every year, year after year?

MR. PETERSON: The line is there.

MR. DRUM: Has your company ever given any thought to a lease situation, or maybe a royalty situation, Jack? Really the objection to the lines is the fact that it does depreciate the value of land and you make one payment, true, and it may be a fair payment at that time, but it seems to me that most of the people that I talk to about these towers, if there were some continuing compensation, it would be a lot more digestible to them to accept the thing. The fact that the power is going to someone out of the state, or much of it is going to people somewhere else, it really would be them that is paying for the expenditure of the towers. I know the statutes of Montana do not permit it; they give good protection to the right of way people at this point, but I wonder, has your company given any consideration to seeking legislation that may permit a continuing payment be made --

MR. PETERSON: I can only say this, Mr. Drum, that that would be beyond the ambit of this hearing. I'm not in a position to decide that policy question on behalf of the applicants. I can only take the law as I find it and we must apply that law, it seems to me, as we find it. The law is that they're entitled to just and reasonable compensation under our statutes and in accordance with various --

MR. DRUM: My question was, was any consideration given to it, and I take it your answer is no?

MR. PETERSON: I'm not privy whether there was or not, but I will find out.

MR. DAVIS: I think we'd better break. Do you want to come back at 1:15 or do you want to wait until 1:30? Let's try to get back at 1:20. We've got five other people; we'll still give them an hour. So if we can get back about 20 after 1, then we'll continue until everyone gets their full time.

(RECESSED FOR LUNCH AT 12:15 P.M.)

Following the luncheon recess, the hearing reconvened at 1:30 P.M. on May 19, 1976.

MR. DAVIS: We will proceed.

MR. PETERSON: Mr. Chairman, I have concluded my arguments. With regard to the questions which have been posed to me, I will get answers to those questions this afternoon and tonight and respond to those questions tomorrow, if that's agreeable. Because of time constraints and we have other people who wish to address the Board, I'm going to ask that we now conclude our arguments and let the public witnesses present whatever they have to say.

MR. DAVIS: Who's next?

MR. PETERSON: Mr. Wilkerson.

BY PROPONENT

By Mr. Ron Wilkerson
Public

MR. WILKERSON: Mr. Hearing Examiner, Mr. Chairman, Members of the Board, good afternoon. My name is Ron Wilkerson. As Kalispell district manager, I represent Bonneville Power Administration in Montana. I grew up over in Darby in the Bitterroot Valley and received my degree in electrical engineering from Montana State University, so I am keenly interested, both from a professional standpoint and from a personal standpoint, in the issues that are before the Board of Natural Resources and Conservation.

My comments today will largely be directed to the BPA service area, which has been described in evidence already submitted in testimony. This service area, for your reference, does include Montana west of the Continental Divide and small portions of Montana lying just to the east of the Continental Divide in Montana.

As you know, I testified earlier for BPA in this proceeding, not as a witness for the applicant and not as a witness for the opponents, but as a public witness. Because of BPA's deep involvement in regional power supply planning and because of our leadership and experience with extra high transmission lines, it seemed appropriate that I highlight my earlier testimony today.

The time provided to me for this purpose by the applicants is appreciated.

BPA, as a federal marketing agent, wholesales power from twenty-nine large dams in the Pacific Northwest. We operate this nation's largest network of high voltage power facilities, more than 12,000 circuit miles of high voltage power lines and 340 substations. The BPA power transmission system serves as a backbone for all of the utilities in our 300,000 square mile service area, which includes, as I mentioned earlier, Western Montana.

In total, BPA supplies about half of all the electric energy consumed in that region and our transmission system carries about eighty percent of the amount of power required in the entire area. The regional power supply system in Western Montana and in the Pacific Northwest is the result of cooperative planning efforts on the part of the publicly owned utilities, such as Missoula Electric Cooperative; of the investor-owned utilities, such as Pacific Power and Light Company; and of the federal entities.

We have worked closely together on the planning, following a one-ownership concept to insure that each facility that is planned is sized, located and scheduled to meet regional needs rather than the needs for any one utility and rather than the needs for one geographic area. This is prudent, we believe, when you consider the economics and the environmental impacts involved. It follows that in case of a shortage of electric power supply for any one utility, that shortage will be distributed to all the utilities.

As I mentioned in my earlier testimony, an interconnected power system such as we have is similar to a bathtub of water. If it isn't full at one end, it won't be full at the other end. A power shortage, a shortage of energy in the Pacific Northwest, will certainly be a shortage of energy in Montana. BPA sales to Western Montana customers during recent years equals about half of the entire amount of electric energy consumed within the state of Montana. Because Hungry Horse Dam has only produced about one-fifth of the amount supplied by BPA, it's evident that Western Montana has relied heavily on out-of-state sources. Even with Libby in full production, BPA will supply a large portion of its Montana obligation with energy that's produced out of state.

Montana is rather unique in that it straddles the Continental Divide, headwaters of the Missouri and of the Columbia. The State includes a rather small portion of the Columbia River drainage basin. Again using the bathtub example, we in Montana take a lot more out of our portion of the tub than what we put in. This circumstance is not unusual when you consider that this river basin and the power facilities have been planned, developed, controlled and operated in a coordinated manner to serve the needs of all the people.

Exceptionally high load growth is being experienced by the BPA served rural electric cooperatives in Montana; a compound rate of growth in the order of ten percent. This is on energy. Much of this is from expanding agricultural production, as you probably know. Deficits or shortages are expected in the Pacific Northwest during the late 1970's and early 1980's under low stream flow conditions. The forecasts are assembled annually by the Pacific Northwest Utilities Conference Committee and these estimates are used as a basis for planning by all the utilities in the cooperative planning effort that I mentioned earlier.

Regional deficits, if they do occur, will require mandatory curtailment of use. Adding generators at existing dams does not increase the amount of water that flows down the stream and thus will not produce much additional electrical energy. Thermal plants, coal and nuclear, contribute energy to a power supply system, and adding hydro generators at existing dams only serves to help meet peak demands, which is not presently a problem. Obviously, in a mostly hydroelectric power system such as we have with large variations in annual stream flows, most years there will be sufficient water -- more water than we need to generate electricity with, because we have based our planning on low stream flow conditions.

We're fortunate, in the Pacific Northwest, to be able to market much of this temporary excess water in the form of electric energy to buyers in the Southwest when no market exists within our own region. Not only does the arrangement save burning large quantities of oil, the revenues which we received in the Pacific

Northwest from sale of this power helps keep our rates at a lower level. So much for the need for electric energy in the Pacific Northwest.

Let me mention high voltage power lines. Of the more than 12,000 circuit miles of lines owned and operated by BPA, about 2600 miles are rated at 500,000 volts or 500 kV. Now, I could go into a lot of detail about the characteristics and effects of 500 kV lines, extra high voltage lines, like I did in my earlier testimony; but suffice it to say that the environmental impacts of 500 kV lines are well known and they are reasonable. BPA is not only adding additional 500 kV lines to its system to more efficiently transmit energy and more efficiently make use of the land that the right of ways cross, but we're also evaluating and considering using lines rated at 1100 or 1200 kV.

Thank you.

MR. DAVIS: Mr. Follensbee.

BY PROPONENT

By Mr. Jim Follensbee
Public

MR. FOLLENSBEE: Good afternoon. My name is Jim Follensbee. I'm the manager of the Central Montana Electric Generation and Transmission Cooperation, which I'll refer to as the G & T. The G & T is a federation of fifteen rural electric cooperatives that provide electricity to more than 42,000 Montana rural citizens sprawled across approximately 560,000 square miles of Central Montana; an area which extends from Dillon and Cut Bank to the west, Wolf Point and Broadus from the east. The G & T's job is to sign a contract for an adequate, insured, long-term supply of wholesale electric power at reasonable prices to take care of the future needs of its member rural electric coops.

Several of the managers of these rural electrics have made proponent statements at previous hearings, but could not be here today and have asked me to represent them. They are Howard Zahller, Yellowstone Valley Electric in Huntley; Rod Siring, Park Electric, Livingston; Colby Rader, Fergus Electric, Lewistown. The other G & T rural electric coop members that have given unanimous consent to my appearance as a proponent in their behalf are: Beartooth at Red Lodge, Big Flat at Malta, Glacier at Cut Bank, Hill County at Havre, Marias River at Shelby, McCone at Circle, Mid Yellowstone at Hysham, Northern at Opheim, Sun River at Fairfield, Tongue River at Ashland-Broadus area, Valley at Glasgow, and Vigilante at Dillon.

Individually, or as a G & T, these rural electrics have never owned generation because of large amounts of capital required. Instead, they've always bought their power from the Bureau of Reclamation, Bonneville Power Administration and the Montana Power Company. In the past, these supplies have always seemed to be a good, solid, reliable source of adequate power for future needs. However, recent court decisions and policy changes have turned our power supply picture into a jigsaw puzzle. For the rural electrics being served by the Bureau of Reclamation, it was announced two years ago that the Bureau would fulfil our needs through October '77, to the extent that their capacity would permit. Beyond October '77, we were told we must find or develop another source of power to take care of load growth.

Last March the Bureau of Reclamation sent the G & T a notice of proposed final assignment of firm power which set our winter allocation -- to us that means January -- at 62,036 kilowatts, or 62 megawatts after October '77. During January of this year, our Bureau load was 64,340 kilowatts, which leaves a short fall of 2,300 kilowatts before we even get started. In January of '78 we could be deficient as much as 13,000 kilowatts.

The Bonneville Power Administration situation is similar. On January 9 of this year they advised all of their customers that delays which were incurred in the construction of the Reasoner Generating Project could result in energy shortages in the 1979 water year, two million average kilowatts. During 1975, these two agencies provided the G & T members 67 percent of the total electric energy needs, which called for 98 megawatts of capacity.

So, we're in a situation where these two agencies who have been supplying 65 to 67 percent of our total requirement have told us that all increases in capacity and energy must be generated by somebody else. This leaves the G & T asking our 35 percent minority supplier, Montana Power Company, to provide us with the generation for 100 percent of our growth; not just 35 percent.

All right, what will our load growth be? This spring we reviewed new power requirement studies for twelve of our rural electric cooperatives. These studies included purchases for 1975 and are, therefore, very current; were made according to tried and true REA forecasting procedures. They use these for loan feasibility and I think REA has one of the most successful lending programs of the federal government. These studies point very definitely to the continuation of a doubling every ten years, which is seven to eight percent every year.

Contrary to some information presented during these hearings, rural electric cooperative loads have been growing faster during the last five or six years than they were during the last ten years. New irrigation pumps are consuming large amounts of power and electricity; applications for more pumps are being received every day. New homes and light industry are going all electric. Propane and fuel oil prices have accelerated much faster than rates for electricity, so rural people are converting their water heaters, ranges, and heating systems to electric.

What does this mean to the Montana Power Company and Colstrip units 3 and 4? It means that in 1985 we will need 298 megawatts of power, and 202 megawatts, or 67 percent of this, must come from our former 35 percent supplier, the Montana Power Company.

Generating capacities of the Bureau of Reclamation and BPA will remain static, but our requirements from the Montana Power Company will have grown from 52 megawatts to 202 megawatts, an increase of 388 percent.

What are the alternatives? We can talk about solar and wind power and nuclear, but if we're going to be realistic, we end up back at coal. Are we going to burn coal at Colstrip under controlled conditions to generate a clean fuel for our homes and businesses all over Montana or are we going to ration electricity and burn coal or wood to heat our homes and stores. Can you imagine what our towns and villages will look like when everyone has converted to coal or wood. Perhaps we will pass laws to ration electricity -- perhaps when we pass laws to ration electricity, we can also legislate scrubbers into the chimneys and smokestacks of our homes and small businesses to minimize the clouds of black smoke and soot we can look forward to during our cold winter days.

Why should Montana citizens sit on top of the world's largest reserve of strippable coal and take a chance on facing the shortage of electrical power? Thank you for your kind attention.

MR. DAVIS: Thank you, sir. Who's next? Mr. Hanson.

BY PROPONENT

By Mr. Rod Hanson
Public

MR. HANSON: Honorable Mr. Davis, members of the Board, ladies and gentlemen: I appreciate the opportunity to be here today; in fact, Mr. Follensbee generously gave me a couple of minutes of his time so that I could appear here and make a couple of brief statements this afternoon. My name is Rod Hanson; I'm manager of the Sun River Electric Cooperative with headquarters at Fairfield, Montana. The Sun River Electric Cooperative is a distribution cooperative that serves the electrical needs of some 3350 consumers in an 8-county area surrounding Great Falls.

I appeared to testify before your Board in February, and I am not planning on making any changes in the testimony I gave at that time. In fact, I have no apologies for that testimony; it's as valid today as it was then, if not more so. But I do want to take just a couple minutes that Jim allotted me to bring up a couple of items that I touched on then and to stress the importance of these items.

The rural electric cooperatives have long been advocates of an accelerated research program for the purpose of speeding up the search for other means of generating electric power, such as solar, wind, geothermal and MHD, the powers that you've all heard about. And we still are interested in this research; we think it's necessary; but we know that none of these methods of electric generation will become commercially operational in anywhere near the time frame that we are looking at here today. Under the existing programs and policies of either the government or private industry, we're just not going to get that power in time. The only realistic answer, as far as we're concerned, that we can see in this area at this time, that is coal. We think that it's important that that is understood.

The second thing that I would like to mention, during these hearings there have been several indications that the rural electric cooperatives have been either enticed or browbeaten into their support of Colstrip No. 3 and 4 by our big brother, the Montana Power Company. I'm here today to tell you that it's just not so. Being one of those who have had considerable experience and probably a few battlescars in both legislative and court fights with the Montana Power Company over the years, I can understand why some people might tend to be suspicious of our joining here in support of the same project that they are. But I want to reassure you, if you need reassurance, as I did in my earlier statement, that I've never been in ardent support of the Montana Power Company, I've disagreed adamantly with them, as many of you know, over the years, I still do and I'm going to be doing it in the future; there's no doubt about it. And I'm not here today to support the Montana Power Company, but I am here today in support of early construction of Colstrip units 3 and 4, because the rural electric cooperatives need that power.

Our projected load increases indicate that we're going to be facing a critical power shortage as early as 1982; depending upon load growth, maybe sooner. And somehow we've got to have power to meet those loads.

We don't, at the time at least, and I can't see anything in the near future, find any alternative source of power that we can use other than this power that's going to be generated by the Montana Power Company and their cohorts in this project at Colstrip. If we could, I'm sure we would be trying to get it; but we do not see it on the horizon at this time. So for that reason, we want to urge the early and favorable consideration of the construction of Colstrip units 3 and 4. The future well-being of your neighbors throughout Montana could well be in your hands here today.

Thank you.

DR. CLARK: Let me ask a question. To what extent do the REA's in Montana lean on Basin Electric?

MR. HANSON: In the eastern part of the state, they are using some Basin Electric power now; I think probably not over half a dozen cooperatives, if that many. Of the fifteen cooperatives that I'm talking about here at this time, fourteen of them have no use of Basin power whatsoever; one does get part of their electric from --

DR. CLARK: To what extent does Basin Electric project it's ability to continue to supply?

MR. HANSON: Well, Basin Electric serves on the eastern side of the Bureau system, and we have some physical problems, as I understand it, and the Bonneville people that are here, Ron Wilkerson, could probably tell you this better than I can. There is a physical problem of getting that power from east of the Basin system into the western part of the state, due to part of it being generated by hydro means, part of it being generated by coal-fired plants, and that type of thing; your cycling problem gets to be a problem. And at the moment --

DR. CLARK: The problem is interties, then?

MR. HANSON: The problem is definitely one of interties, plus, also, capacity.

DR. CLARK: Is Basin Electric pretty well up to their limits now?

MR. HANSON: Basin Electric has all the power that they are now generating, sold; they are planning on building a large plant in Wyoming and it's all been subscribed for, to my knowledge. I don't think they have any extra.

DR. CLARK: So they're not in a situation to pick up any of your co-op problems, then?

MR. HANSON: Not immediately; I suppose if this couldn't be done, we'd try to work something out. I don't know how in the world we'd do it, but we'd sure try.

DR. CLARK: Thank you.

MR. DAVIS: Thank you, Mr. Hanson. Mr. Cox.

BY PROPONENT

By Mr. Russell J. Cox
Public

MR. COX: Thank you, Mr. Davis. Members of the Board, ladies and gentlemen: My name is Russell Cox; I'm editor of Montana Rural Electric News, a staff member of Montana Associated Utilities, which is the statewide association for electric cooperatives.

Throughout the lengthly proceedings conducted by the Department of Natural Resources, it has appeared obvious to me, at least, that this proposal on the part of the applicants, the Colstrip units 3 and 4, has not been treated fairly. Instead we seem to have been watching a carefully orchestrated attempt to arrive at a final decision predetermined by a state bureau which is supposedly charged with the responsibility to investigate, to think impartially, and then to act in the interests of the people of Montana.

During earlier cross-examination by the attorney imported to help the Department build a case they sought to present, I was asked in response to my view that conservation and an energy policy must be established by a body representative of the people; I was asked by Mr. Shenker if I felt DNR represented the people, and I answered, no. And I don't think that anything has happened in this lengthly process to make me change my mind and convince me that the people have been represented here. Now, the applicant firms are a minority group; and those of us in the other utilities, the rural electric cooperatives, are representing consumer owned utilities in thousands of homes; we are a minority group. Vocal minority groups, small minority groups, have been heard here; and there's a third minority group, the Department of Natural Resources, which apparently made its own decision before beginning investigation, before hearing testimony. And I can't conceive of a thinking person actually feeling that DNR's actions in this matter have been representative of anything other than personal views and prejudices of the staff members.

Where have the people of Montana been during these proceedings? What have they been doing? I think they've been doing things like having babies and buying crockpots and chord organs and color TV's; and according to DNR they've been planning some massive agricultural irrigation, which means tremendous capital investments in agriculture and new electrical loads of vast dimension.

The people have been turning on and plugging in appliances, and every time they flipped a switch throughout these years that we've been talking about Colstrip, the lights have gone on, things have worked; and the people are wondering, what is this hassle, what is this energy problem? The people, the majority, whom the Department and this Board are charged to represent, have been busy becoming more numerous and buying appliances and making the problem worse, while we're really not much closer to a solution.

In reading the proposed findings of fact prepared by the Department, it seems to me they focused almost entirely on the area of need. It also appalls me to find that some of the statements appear to be taken out of context. The Department apparently finds no challenge other than in the area of need and the argument they present seems weak and misleading to me.

The Department attempts to say, for example, that any deficit in the Pacific Northwest is for power for Bonneville Power Administration and they discount it and write it off, ignoring the reality that power supply is a total regional problem. In the meantime, Bonneville has directed preference customers to begin to plan for long-term cutbacks in as much as 25 percent; and that has a direct bearing on thousands of Montana consumers served through rural electric systems.

There's another interesting development of recent weeks concerning these preference allocations. The governor of Oregon, in a very bold move, has proposed a plan under which that state's authority would retail electricity to all Oregon homes and farms, contracting with existing utilities to simply wheel the power. If realized, this plan would, in effect, make the entire state of Oregon a preference customer. As a result, I presume the Bonneville Power Administration would have to dole out the preference energy allocations over tens of thousands of additional homes, and this would have the effect of further undermining power supplies to Montana consumers. Now, the Oregon proposal may be a bit provincial, but provincialism has also been a great part of the thinking expressed in DNR opposition to the Colstrip units throughout this debate.

DNR has struck out at energy consumption being below industry projections at the present time. The logic appears to be that if our projections are low for today -- or high for today, rather -- how can they be trusted for tomorrow? Well, DNR is correct to a point. Energy consumption is off because the economy is off, because millions are unemployed, because we have a recession going which has cost every man, woman and child in this nation $7,000.00 out of pocket to date in terms of goods never produced and services never performed.

The fact is that long-term energy projections have always been amazingly accurate; they're not that far off now. Had there been no recession, they would have been on target today. The problem seems to be that energy professionals have been far, far more accurate in projecting our loads and demands than have financial and governmental experts been in predicting our economy.

The rural electrics of Montana are united in their support of Colstrip units 3 and 4. We are absolutely convinced that there remains no other alternative to our load growth needs within the critical time period. We're reluctant to see coal stripping because we are concerned about aesthetic values; but we're far more reluctant to see a situation develop where provincialism in our state results in outsiders coming in and taking over and raping this state simply because we haven't the intestinal fortitude to do what we know has to be done and to see that it's accomplished in the best possible way to preserve our interests and our heritage.

Now, this energy question has a unique impasse in that everybody's right; the environmentalists are right and the consumers are right, industry is right, everyone is right. Everybody wants to win. We're frightened at it and polarized on the energy issue. If we fail to address ourselves now to the real needs, if we fail to take positive action, everybody could lose. There's no way in which the people of Montana can possibly be represented or served without compromise to the greatest common good.

Even with leadership that would result in meaningful conservation and even with zero energy growth, electricity share of the energy market must double by the year 2000. This is not a time for buck-passing; it's not a time for isolationism or provincialism; this is not the time, nor is this the issue for self-serving egotism to take the place of common sense and sound judgment. We have traditionally imported far more energy than we have exported. Our new clothes, our new cars, our new trucks, our tractors, much of our food, virtually every product we consume in survival, represents the production and consumption of energy somewhere else; and we ship energy in by the box and case and truckload and trainload.

Our people speak to you every day in their buying habits, in their lifestyles, telling you they desire to continue to use energy; and one of our greatest resources is energy. We're going to need more, in the form of electricity, right here and throughout the region.

Members of the Board, if the only question concerning Colstrip 3 and 4 is a question of need, as the Department of Natural Resources appears to state, then I respectfully suggest that you have no other alternative but to grant approval for construction of these units at the earliest possible date, subject to controls and regulations as will assure Montana and this region the energy the people want and will need with the least amount of inconvenience and ecological disturbance.

MR. DAVIS: Thank you, Mr. Cox. Mr. Hilley.

BY PROPONENT

By Mr. Benjamin W. Hilley
Attorney for the International Brotherhood of Electrical Workers

MR. HILLEY: Mr. Chairman, members of the Board, Mr. Davis: How much time do I have, by the way?

MR. DAVIS: Well, we'll give you 26 minutes; will that be enough?

MR. HILLEY (continuing): By way of introduction, I represent the International Brotherhood of Electrical Workers. You will find out intervention in Volumes 24 to 27. In any event, like the cooperatives, when we intervened, we had some raised eyebrows and all of the rest and quite a few questions as to why we intervened.

The reason why we intervened, primarily, is there are no jobs. We have seen the Anaconda Company lay off 50 percent of their work force in Butte, 30 percent of their work force in Anaconda; we've seen the railways and their massive layoffs; we've seen the highway fund cutbacks; we've seen the construction go down the drain; we've seen Libby Dam concluding with their construction project. Unfortunately, with this problem, it's very serious to us. We've seen our hiring hall list double, triple, quadruple, for people who want work; and also we see people not being dispatched out for work, simply because there is no work.

When I was first asked to intervene on behalf of the IBEW, the first thing that I think that we had to decide what to do was to find out where we have been, where we are and where we're going. Is the employment situation going to let up, or unemployment problems, or what is going to happen? As a consequence, we contacted Dr. Paul Polzin at the University and asked him, in fact, retained him to give us an analysis of this problem. Doctor Polzin asked what we wanted; we told Doctor Polzin we wanted a picture of the whole employment problem in the state as he could dig up in the shortest length of time.

Now, after we received Doctor Polzin's report, we were certainly in a position to alter and change our position. Needless to say, this report, and I'm sure you've all seen it, is very alarming, to say the least. What is the future of our employment picture in this state? But our position altered in the sense that inasmuch as we do claim to represent people, and we feel as though we do, we did not actively participate in the hearing before the Department of Health simply because we felt like if this was going to kill off people, then perhaps we had no business there; we had no technical knowledge to be there. As a consequence, we were not there and we did not participate at all.

From the newspaper reports, however, it seems as though, when we talk about wildlife, vegetation, we would like to submit to you that human beings are just as important as wildlife and vegetation. Perhaps we are riding on the coattails of our fellow animals here, and that refers to our wildlife and so forth, but we need jobs.

Now the Polzin Report, which I will refer to; to begin with you will see, of course, in that analysis, that this state has a job gap. This state, unless something radically changes, is going to have a job gap. By 1980, the predictions move between 17,000 to 25,000 people unemployed in this state. No jobs. Alright, now, what has been Montana's solution in the past and what can be our solution in the future? Well, certainly, one thing we can keep on exporting our fellow Montanans where they can find jobs; and apparently this is the only way, unless we can dig up industry or something. As far as our out-migration problems are concerned, Doctor Polzin concluded that the only way that we have been able to maintain this so-called lifestyle is by exporting our people, our children, our childrens' children; and this has been going on for many years, and I refer you back to that report. Certainly, exporting our people is a very selfish point of view.

Now, how does this tie in to Colstrip 3 and 4? Well, to begin with, although the permanent jobs with the construction of 3 and 4 will be very few in number, it is also Doctor Polzin's conclusion that there will be no single industry that will fulfil this job gap. However, this industry along with, hopefully, other industry on a piecemeal basis, will tend to continue to lessen, I should say, this job gap.

As far as elimination of the job gap entirely, Doctor Polzin concluded that we would have to have, between now and 1980, some 24 to 35 new oil refineries, some 8 to 12 new Colstrips or some 12 to 18 manufacturing plants. Now, certainly we all realize that this is somewhat ridiculous if we can eliminate any type of job gap of this magnitude by 1980; let's face it. However, electrical power does give the availability for a -- more availability, or let's say more location incentive, as far as if this power is here.

This is about where we are heading, and as 3 and 4 certainly is not a panacea for all of our unemployment problems, we do have a problem, even if this recession starts moving back; certainly it is not going to solve it here, this is also dealt with in the report; and what I tried to do today is just summarize our position because the people who work in this state, they are also Montanans.

Thank you.

MR. DAVIS: Thank you very much, Mr. Hilley. Does that conclude the witnesses that are proponents? Very well, Mr. Meloy.

BY OPPONENTS

By Mr. Mike Meloy
Attorney for Northern Cheyenne Tribe, Inc.

MR. MELOY: Mr. Sabol, members of the Board: By way of introduction, my name is Mike Meloy and I'm representing the Northern Cheyenne Tribe in this proceeding.

The items which I will cover today will, of course, be directed at the issues in this proceeding which affect the Tribe. I will not talk at this point about need. The Department of Natural Resources will spend a great deal of time controverting the position of the applicants, that there is a need for this facility. We are of the strong position that there is no need for this facility; we incorporate in our arguments right now the arguments made by the Department of Natural Resources tomorrow.

Some fourteen months ago we all met in a fairly empty meeting room in Bozeman in the Student Union and we spend most of that hearing, as I recall, discussing various aspects of this proceeding, most of which I think at that point was speculation about how the Siting Act was supposed to work and what kinds of decisions this Board should make under that piece of legislation. I think it was fairly clear at that time that this was to be the first test of a comprehensive siting statute in this country, and certainly it was the first time a state has been placed in the position of making a determination as to whether or not there should be an industrial development of that size to be constructed in a state.

And if you look at the statute, although it's called a Siting Act, which contemplates that there are sites available and that the function of this Board should be to look at the various alternatives, assuming that need does exist; to look at the alternatives and to make a decision on the site that represents a site with the minimum adverse environmental impact.

But in the course of this proceeding, this Board has not been placed in that posture. This Board has been placed in a posture of deciding not whether Colstrip is a site in Montana or the Northwest which represents a minimum environmental site; rather, the Board has been placed in a position of deciding whether or not these plants should be constructed. And let's examine why that is true.

It's true because the decision to site the plants at Colstrip, units 3 and 4, was made by the applicants. There is not one shred of evidence in this proceeding upon which you can base a decision that there is a better site in Montana. I have some comments a little later relative to Mr. Bellingham's discussion and his presentation of Mr. Labrie's testimony relative to all of the alternative sites that went into siting 1 and 2; but I understand those alternatives were for 1 and 2, they were not for 3 and 4. Three and 4 was sited at Colstrip because 1 and 2 were there and that simply does not fulfil the requirements and obligation that you have to carry out under the Siting Act. So you are placed in a position of deciding whether or not they should be built; not where.

In looking back at the problem that this Board has, it seems to me, in very simplicity terms what has happened is this: The decision was made to site the plants at Colstrip. There was no environmental analysis done prior to that decision. They admit that. What has happened is that after the decision was made, they then hired somebody to do an environmental analysis and hope, I assume, that they could persuade this Board that their choice is correct.

Each one of us will examine the credibility of that environmental study which was made after the decision, and I think that's important to keep in mind. We all have our own views of the strength of that study; but it has placed this Board in a very difficult position because if you don't accept that evidence, the statute says you may not certify. And, of course, if you don't certify, then you assume, as a Board, all of the very heavy responsibilities of making a decision of that magnitude; and I think it's important to point that out.

I think the Department, in it's case, has presented sufficient evidence that there were alternatives. There were alternatives to the proposed site at Colstrip. There were alternative ways of fulfilling needs, and you'll hear all about that tomorrow; that there was time for the applicants to have tested their air pollution equipment before they built 1 and 2 and before they applied for 3 and 4; they simply did not do that. They're testing their equipment right now on units 1 and 2 and they're still asking this Board to certify the same kind of plant to be built in conjunction with units 1 and 2; and that brings us to another dilemma which they have placed you in.

We have been hearing throughout the course of this proceeding, delay. The applicants are saying, give us our certificate right now, we need it. Why are they saying that? One can be cynical and assume that they don't want you to know what's happening at units 1 and 2. One can be generous and assume that they're making a reasonable effort to try to take care of the problems that they're having at units 1 and 2. One can also be generous and say that this delay that we've had has given the other people in that region a chance to plan, a chance to do studies to determine what kinds of impacts are going to be felt by potential air pollution from 1 and 2. So there are some good things about the time that this proceeding has been taking.

But again, as one of the last speakers said, you're being placed, he's saying, at this point in time there is no other alternative; you must not wait any longer. To accept that argument gives to the applicants the benefit of their mistake in not properly planning this facility as it could have been done; and they are shifting the burden from them to you by saying you must not delay. My position is that you shouldn't be fooled by that rhetoric, and you should look to see what really is causing the delay.

If unit 1 is having as much trouble as Mr. Bertsche seemed to suggest in his question, then it would be unconscionable for this Board to approve units 3 and 4 until those problems are worked out.

It's been my function in this proceeding to put forward the position of the Northern Cheyenne Tribe with regard to the proposed construction of these two units. We have sought to accomplish two things by our participation: First, we want to assure the owners of the half a million acres of land downwind from that facility, containing a group of people who have a lifestyle and culture markedly different from the white culture that exists in that area, a group of people whose economic stability and livelihood depends on the land, to make sure that those people are not ignored.

The second purpose for the Tribal participation in this proceeding is to assure that the Tribe is not deprived of their sovereignty granted to them by the U. S. Supreme Court in the Cherokee Nation case; to assure in the language of that decision that the Tribe retains their right of self-government and the right to determine their own destiny. By participating in this proceeding, it seems to me, the Tribe is working through a process in Montana whereby their concerns and their needs can be considered by the State of Montana in adopting an industrial development policy. But understand with regard to their position the record is clear: The Northern Cheyenne Tribe will not permit interference with their people, with their culture, with their land and with their air, by any impacts from units 3 and 4.

With regard to the first basis upon which the Tribe is participating in this proceeding, I'd like to review the following facts that the record is clear on: The Northern Cheyenne Reservation is situated twelve miles south of Colstrip. Many of you have been there. It contains 4200 people, the Reservation does, about 3,000 of which are Indians. In the past two years, the population of the Reservation has increased by about a thousand people, but the Indian population has stayed the same.

There is one paved highway that crosses the Reservation north-south; it's the one that goes from Colstrip to Hardin. But because of the particular location of the Reservation, it has remained fairly isolated as opposed to the same kinds of reservations around the country. The result of that has been that they have been, by necessity, forced to develop their own economy and to develop their own method of subsistence, economically.

The two main bases, of course, are cattle and timber. The cattle industry contributes an annual income to the Tribe of $451,000 and that money is redistributed to Tribal members through a very complicated allotment program. The families engaged in the livestock industry keep the roads open in the winter; the cattlemen's association provides loans for people, for the Tribe -- has loaned money to the Tribe; it is the mainstay of the bank in Ashland; contributes food for the religious ceremonies that the Tribe has. There is a substantial portion of the operation of the Northern Cheyenne Tribe that depends on the cattle industry.

Of course, the timber sales on the Reservation produce an income of $413,000 to the Tribe and employ, on a full-time basis, about forty people. There is substantial evidence in the record about the Northern Cheyenne culture; they are considered among the various Indians in this area to be the "singled out ones." They have a very rich and a very deep cultural heritage. There have been numerous books written on the culture, on the traditions, the sacred ceremonies of the Tribe. If anyone is interested, Peter Powell of Sweet Medicine is probably one of the best.

The Northern Cheyenne Reservation has a multitude of problems. It had problems before coal development came. It has problems which are similar to all Indian reservation problems: They've got poverty; they've got unemployment; they've got housing problems; they've got a high incidence of respiratory ailments; all of these things much higher than their neighbors.

Because of, I suppose, its isolation and its requirement that it take care of its own problems, the Northern Cheyenne Tribe has done a great deal, a great deal more than most tribes to take care of those problems. They are, in fact, one of the first tribes to reinstitute the teaching of culture in the Cheyenne language in their schools. They have started their own construction company; they have started training programs for people on the Reservation.

I'm setting, in a very brief way, or painting a broad picture of what the Reservation looks like, what its economic base is and what its culture base is. What, then, assuming that entity to be in existence, what relationship does that bear to the proposed units 3 and 4?

Their timber resource is composed of Ponderosa pine. There is a substantial amount of evidence, both from the applicants and the opponents that Ponderosa pine is indeed a very susceptible species of plant to pollution from sulfur oxides. The applicants are alleging and have submitted evidence that the timber stands on the Northern Cheyenne Reservation will not be damaged; but the testimony upon which that evidence is based comes from people who have done no field research in the area. There are only two people who have done field research in the area: The forest service and Dr. Clancy Gordon. They have both testified in this proceeding; they both predict serious damage to the Northern Cheyenne timberlands.

Those of you who were in the cattle business know how important grazing is and how important the stability of the rangeland is to the cattle industry. Again, there is evidence in this proceeding that the area of the Reservation closest to the plant is the most fragile; and, of course, because the cattlemen have got to base their operation on that grazing land, if that grass is harmed, it's going to have an equal affect on their ability to keep that economic base and to keep that very very important industry going.

The only people who have done field research on the Reservation with regard to species, with regard to potential damage from air pollution, are Doctor Gordon and Clint Carlson's team. And they predict that there will be serious damage to the grasslands from the operation of units 3 and 4.

I guess the conclusion drawn by each of the witnesses presenting testimony on behalf of the Tribe is that we have got concerns. These people say that our grass and our timber is going to be damaged; we cannot afford to take any damage.

With regard to health aspects of air pollution: There is substantial testimony in this proceeding presented by the Department of Natural Resources that there are very serious affects that result from exposure to sulfur oxides insofar as it relates to lung and heart disease, particularly among a population with pre-existing problems. The head of the Indian Health Clinic on the Reservation testified that diseases of the respiratory system are four times higher among Indians than they are among whites in the area, among Indian women; three times higher among male Indians as opposed to non-Indian males in the vicinity in Rosebud County.

He testified that any additional variable, based on his experience and his treatment of those cases; and, again, respiratory ailments include common colds, but understand that the testimony of the Indian Health Service director was based on the kinds of ailments that brought those people sometimes forty miles to that clinic for treatment; and it was his opinion that any additional variable, including air pollution which would increase that already high incident, would have an especially adverse impact on the Indian population because of an already high incidence.

The Cheyenne's have already experienced the impact from units 1 and 2, from the construction of units 1 and 2. They've got people who were employed living on the Reservation, which has increased a problem on the Reservation of housing. Because the land is not fenced, the Cheyenne Reservation is not fenced, there is no method by which they can, except by permit, if someone goes to Lame Deer and picks one up, to keep people off the land. Recreational vehicles can go anywhere on the Northern Cheyenne Reservation because it's simply not fenced, and they've experienced a problem from 1 and 2 with people who are trespassing. The problem became so severe that they adopted an ordinance giving the Tribal Council jurisdiction over those kinds of cases; giving jurisdiction over white people who are convicted of crimes on the Reservation.

They've got problems with road maintenance. Apparently some of the construction equipment, in order to avoid weigh stations, would go to Hardin and use the road up to Colstrip from below, and that put sustantial impact on the Tribe's road.

There is testimony that juvenile delinquency has increased since the construction of Colstrip; and this is significantly, it's just not something that's consistent with what one may assume as an increase in crime in this country. Drug abuse, which was virtually unknown on the Reservation in 1971, is now a serious problem; and anybody knows that if they need some drugs, they can go to Colstrip and get them. There is testimony in the record to that effect.

There have been an increase in rapes on the Reservation almost sixfold in the land four years.

I suppose the most difficult pill for the Tribe to swallow is that they are expected to assume these problems, and they're the same sort of problems that Rosebud County is experiencing. But Rosebud County has the benefit of, as the applicants put it, increases in the tax base; they have the benefit of some coal tax money. There is clear evidence both from witnesses from the Tribe and the witnesses for the applicants that they expect no such revenues to be coming to the Tribe to take care of those problems. None.

The applicants would like to say that the employment opportunities at the construction site are very beneficial to the Tribe. The evidence does not support that conclusion. The applicants, in support of that concept, brought two construction workers from Bechtel who happened to be Indians to the proceeding; they testified that the jobs that they had was good for themselves and their family, but they admitted that they were not representing the Tribe.

I would ask the Board to look at the record to determine whether you think there have been any significant employment benefits to the Northern Cheyenne Tribe. There are 1,184 able-bodied working people on the Reservation who do not have jobs; there are 619 men; there is a 45 percent unemployment rate on the Reservation. At the peak period of construction on units 1 and 2, there were 34 Indians working at the site. That represented one percent of the total work force. One of the workers at the site testified that the job -- the Indians were placed on crews that were given the worst kind of jobs. They gave them jobs of cleaning muck out of ditches; they were given jobs of working underneath the tower where rivets were falling. Please look at the evidence with regard to employment.

It is our position, and I think the evidence is clear, that construction of units 1 and 2 simply did not provide any significant employment benefits to the Northern Cheyenne Tribe. I'm saying that not because I'm putting forth the position that they should; I'm saying that because the applicants are submitting that that's the case and it's simply not true, and it will not be true for units 3 and 4.

All of the evidence that I've discussed relative to the Tribe here has been presented by the Tribe. I think it's important to keep in mind that it's not my job here to bear the burden of proving that this project represents a minimum adverse environmental effect, and I'm talking about sociocultural impacts; it's not my job to do that; it's the applicants' job. The only testimony of any substnatial and credible nature relative to the Northern Cheyenne Tribe has been presented by the Tribe.

Let me tell you about the evidence that has been submitted by the applicants upon which you must make a decision that this site represents the minimum adverse environmental impact. First of all, no environmental studies whatsoever were done prior to the decision to site it at Colstrip. The only study we have is the Westinghouse Study which was done afterwards.

What did the Westinghouse Study have to say about the sociocultural impact of these two plants on the Northern Cheyennes? The project was coordinated by Harold Beisel and he admittedly, in his study, only viewed the Cheyenne Reservation from a car; and, indeed, the area and vicinity of Colstrip. In fact, the person who did the work was an interviewer of his who interviewed three people; one of whom was a banker in Forsyth who was representing that this would be good for the Tribe. The other two people, one of whom, both of whom were represented to be Tribal Council members. Only one of them was and that was the chairman, Mr. Rowland, and he testified in this proceeding on behalf of the Tribe.

I'd like to have you take a look at that Westinghouse Study to see that the evidence, even gained from those interviews, doesn't help you very much in terms of deciding that this facility represents the minimum adverse environmental affect. Mr. Beisel's knowledge of the lifestyle -- this is the guy who did the study on this thing -- the knowledge of the lifestyle of the Northern Cheyenne came from a review of a 1970 U. S. Census Bureau study. That's the thing that he cited as the basis for his knowledge of the lifestyle of the Northern Cheyenne. He admitted that there were no quantitative studies done of the socioeconomic impact. The only study that was done of the socioeconomic impact in that area, other than three interviews of people, was a telephone survey, and the telephone survey wasn't limited to the area to be affected; it was a statewide telephone survey. And that was the basis upon which the applicants are asking you to find that there is a minimum socioeconomic impact in that area.

I think the bottom line of what I'm saying is that the Indians on the Northern Cheyenne Reservation have simply been ignored, and I'll give you one last example. We have gone through this proceeding, the applicants have heard exortations from myself continually through this proceeding about why has the Tribe been ignored; but what is interesting is that, notwithstanding the fact that the

Tribe submitted a forest service map, and it's Northern Cheyenne Tribe Exhibit A, upon which you may look and see that the Northern Cheyenne Reservation boundary is 12 miles from the town of Colstrip; the applicants in their proposed findings of fact most recently submitted, still insist that the northern boundary is 22 miles. Why were they ignored? It didn't have anything to do with historical precedence of white people ignoring Indians and treating Indians bad; it didn't have anything to do with that. There is only one answer to that question, and the answer is that the Tribe was ignored because they simply, as a unit, represent the group that is most seriously impacted by this plant. There's no way of getting around that.

If you ignore the Tribe's testimony, if you ignore the evidence of the Tribe, you are left with no basis upon which to determine the requisite determination of the statute. Even if you ignore the evidence of the Tribe, you may not certify because you do not have evidence presented by the applicants that that facility represents the minimum adverse environmental impact.

I have one last comment on the alternative sites, and I think it's very important because, again, you conceive of the Siting Act as a method by which the state can choose among alternatives and pick the best one. Mr. Bellingham said that he would very quickly go through the proposed sites, and he put a map on the screen here and he went from Billings to Great Falls, to Townsend, to Three Forks, to Livingston, to Cushman. Again, I would remind you that what he was pointing out to you were alternatives to 1 and 2; they were not alternatives to 3 and 4. There are none; none have been submitted. He wants you to believe, and I think you're permitted to believe this if you want; he wants you to believe that even though those sites were done as alternatives to 1 and 2, that they were, in fact, also done for 3 and 4; but that doesn't make any sense.

If you look at the reasons Mr. Bellingham gave, and, again, he said he would go through those very quickly, and I would submit to you that if you would read the evidence of Mr. Labrie, which is the evidence upon which those alternatives "studies" are based, you can read through faster that testimony than you can -- than Mr. Bellingham took to explain it to you. And, of course, Mr. Labrie agrees there are no written environmental studies on it.

He said Billings and Townsend and Three Forks were unsuitable because there were air pollution problems in that area already. Now, if you assume that those are alternative sites to 3 and 4, then why, because 1 and 2 are causing air pollution, is that not the same reason they rejected Billings, Three Forks and Townsend? And another thing that I heard, which is a little disturbing at this point, Mr. Bellingham told you that the reason that Three Forks was rejected was because it would blow smoke into the Bozeman area. Bozeman is forty miles from Three Forks, or thirty-six or whatever. Then why, I ask you, isn't the fact that that smoke is going to be blowing twelve miles onto the Northern Cheyenne Reservation a consideration? Why? Because it was never considered. The site at Colstrip for the certification that you're being asked to make here is based only on economic considerations.

The governing body of the Tribe is my client. They are operating with regard to protecting the Reservation lands as you are in the role of protecting the state. And I'd like to draw a little bit of a microcosm here for you because there is a parallel thing that is happening on the Cheyenne Reservation which is, I think, important for you folks to know about. Several years ago, the allottees, the private landowners, if you will, on the Reservation, sought to lease their coal reserves, notwithstanding the fact that the Tribe had taken the position that they were not prepared at this point to go into mining on the Reservation land. The Tribe was concerned about the impact of stripmining, which they didn't know very much about; didn't know very much about the groundwater system; didn't know very much about the quality control. They knew how important grazing, in particular, was which would be disturbed by the mining; and they went all the way to the United States Supreme Court to protect their ability to make a decision as to whether there would be coal development on that Reservation.

Today the U. S. Supreme Court reversed the U. S. Court of Appeals decision and upheld the Tribe's right to make a decision about whether that coal would be mined. And understand that that coal is very valuable and that if the Tribe were dearly interested in getting that money, they could do so; yet they have continually taken the position that they simply don't know enough about the impact. And that's a tough decision for them to make. It's a tough decision for them to make because the unemployment problems on the Reservation, the housing problems, the economic problems on the Reservation, are still bad, and they are much worse in the state of Montana. Yet they have taken the position that we should not rush into this, and they are not going to be forced into it.

That has not been an easy decision, nor will it be an easy decision for you folks to make that same determination with regard to minemouth generation facilities of the magnitude of units 3 and 4 in Montana.

I commend, of course, to you the example of the Tribe. You are entitled to make your own determination. The Tribe, I think it goes without saying, the Tribe here is asking you not to certify. The statute, in my own estimation, requires certain things to be determined before certification can take place. It's clear in my own mind that those elements simply have not been met; and, in fact, the reverse is true. The evidence is clear that the site of Colstrip is not the one which the statute contemplates; and if it isn't, then you must deny this certificate.

I think the Board could take the posture of the Tribe with regard to their coal development problems of saying, look, we have a method by which we can really soundly determine the nature of the environmental impact, and it's 1 and 2. You can tell how the air pollution is going to be; you can tell how the scrubbers work; you can tell whether there is going to be damage to the surrounding vegetation. What we are submitting, then, I think, as a reasonable thing to you, is to wait and to determine whether or not that's going to be the case; and that's the only reasonable and conscionable way this Board can act. And, again, don't be forced into the situation where you are carrying the burden of their lack of planning and their lack of testing; and I don't envy you your decision.

Thank you.

MR. DAVIS: Any questions? (No response.) If not, let's take a 15 minute recess.

(BRIEF RECESS: 2:55.)

Following a brief recess, the hearing reconvened at 3:15 P.M. on May 19, 1976.

MR. DAVIS: We will go on the record.

BY OPPONENTS

By Mr. Leo Graybill
Attorney for the Northern Plains Resource Council

MR. GRAYBILL: I'm sure that all of us in the room can agree that this is not an ordinary case, and interestingly enough as recently as maybe six or eight years ago, surely no longer than ten years ago, a case like this would not have taken place anywhere in the United States, and the sort of things we've been arguing about this year were not even considered. What has happened is that there has been a great change in conditions in our country and the wheel of times turned, and the energy crisis, I think, had a great impetus on it -- but not only the energy crisis -- and the whole issue of environment and ecology and the future use of our resources has become paramount and new institutions have been formed to accommodate that change. In Montana probably the most significant institution is the Siting Act.

Now Mr. Shenker is going to talk with you tomorrow about need a good deal, I know from talking to him, and I don't want to suggest that need is not a basic element of this case, but I do want to suggest to you board members that there are many issues in this case beyond need, beyond the issue of need. If the issue of need was the whole thing, we wouldn't need the Sitin Act; we could build it wherever we need it. It's because of thes other issues that the Siting Act came into existence, and in effect the Siting Act enjoins upon you board members the job of seeing not only that we meet the need, but that we do whatever we do to meet the need well.

Now, with that background, I want to point out that this case starts out, or at least this argument starts out, with a number of uncertainties that surround this project. There are just a lot of things that aren't very settled yet, and if these were minor matters I think we would all agree they should be overlooked in the magnitude of the project, but they really aren't. The problem of sewage pond seepage and size, the problem of the workability of the scrubbers, the problem of whether the disposal ponds will leak, whether there's enough disposal pond area available, the problem of the centerline location of the transmission line, the problem of whether the weather data is sufficient, all of these problems are important and none of them are settled to date, after a year of testimony. The applicants' position seems to be, "If it isn't all right, we'll fix it. We want to do it right and we'll fix it." And that raises, I think, for you board members and for the state of Montana, its citizens, a question of the credibility of the applicants. Many of the things I'm going to say this afternoon I say because I want you to judge that credibility.

One other preliminary matter before I get into the findings, I would like it clear to all of you that I have no quarrel with the applicants or any of the companies, Montana or of the four out-of-state companies, nor with my good friends, their lawyers, on the issue or the principle that the power companies have a right to make a profit and do the best they can to run a good utility. I have no quarrel with that. They should run a good utility and they should make a profit. I want to point out to you board members, however, that their principal allegiance is to their stockholders. Now they have certain other statutory duties enjoined upon them from time to time by the legislature like we all do, but the company is supposed to make money and run a public utility, but that is not really the role of the board, to just see if they do a good job running the public utility. In a sense this board sits as a super board of directors in each of these five utilities, and you gentlemen have to sit there and look over their shoulders, and you have to decide whether what they do is good, not only for the companies, not only meets the need, but whether it's good for the citizens of the state of Montana and for our ecology and our environment. You have a duty different from theirs in level and magnitude. You have to see not only that it works in terms of utilities and in terms of profits, you have to see that it works in terms of society, in terms of our culture and the Indian culture that Mr. Meloy just talked about, and you have the job of seeing whether this board of directors, or the five boards of directors that run these power companies, have made good decisions that do not affect adversely the citizenry and the state of Montana and our future.

Now I can't help saying softly, "I told you so." You know it's been just a little over a year since we had a meeting downtown in one of the rooms there. We had a big argument about whether to make Carl Davis write findings of fact and conclusions of law. Most of you were there, maybe one or two of you weren't, and you know we had a big discussion about whether Carl should do that, and I told you that he just had to do that and then we could all sharpshoot, both sides, at his findings if we didn't like them, but you fellows felt that you wanted to get a closer feel of the evidence. I'm sure none of you appreciates this 50 volume stack in the department and the Board of Health hearing, and the 50 volume stack in the Natural Resources hearing which you are going to be charged with. To tell you the truth I didn't appreciate it either. I would have said the same thing if I thought it was ten volumes. But I think we can all agree, including my friendly colleagues over here, that the record is immense, gigantic, difficult to comprehend. I claim the only man that had a chance to comprehend it, because he heard it all, was Carl Davis, and he didn't have to and I don't think he did, but he could have if we had made him. But what that does is that puts upon you people, and incidentally upon us lawyers, a terrific burden today. The applicants have got 165 findings covering 83 pages; the DNR has got 860 findings, 106 pages. Our poor little outfit has got 117 findings and we got it into 29 pages. The applicants took 84 pages to comment, and the DNR took 22 pages to comment; that's just on the findings, and you board members get to draw your own set. I can just hear Joe Sabol thinking out loud, "I wonder why we did that." All right, now because of that I want to use my time this afternoon in a manner that I think might be helpful to both of us. I want to follow the set of findings that the Northern Plains drafted and which you all have, and I'm not going to comment on all the findings, but I am going to comment on maybe 20 of our 117 findings which I think are significant, and if you want to follow along, I will from time to time tell you where I am in our findings.

First of all, we outlined our findings in categories under the statute as near as possible, and there are part of the statutes in section 810 and part of the statutes in section 816, but starting at the beginning we went chronologically. 810 sub-1, sub-C says that you have a duty to find that the facility represents the minimum adverse environmental impact and that you're supposed to consider, among other things, the nature and economics of various alternatives, and in that connection I want to talk about Finding of Fact number three, where we believe you should find that the applicants have not given consideration seriously to other sites in the state or outside the state for location of the proposed facilities.

There has already been some talk about this today, and as I'm going to do many times today, I'm not going to try to remember, I'm going to try to read from the record. Here's Mr. Labrie on page 9097. Question: "You said you headed up the team that selected Colstrip as a site?" Answer: "Yes." "Are you talking about Colstrip 1 and 2 or 3 and 4?" "I'm talking about Colstrip 1 and 2 when I made those remarks." "What part of the year?" "That would have been about 1970," he says. "And that was before the Siting Act was enacted?" Answer: "That's correct." "Therefore, I take it, the environmental requirements of the Siting Act were not considered by you in that particular selection?" Mr. Labrie says, "No." Now this morning Mr. Bellingham said that the environmental considerations were considered, and Mr. Labrie was on the committee that chose 1 and 2, and I'm telling you that Mr. Labrie said just the opposite of Mr. Bellingham. Then, "Were you on the team that selected the location for Colstrip 3 and 4?" "Yes, I was working with the task force." Skipping over page two, "Wasn't there at least a tentative decision to build 3 and 4 at Colstrip by December of 1972?" "There was a tentative decision that it was probably feasible." "Now, that was, of course, before the Siting Act was enacted; isn't that so?" Answer: "That's correct." "And so, I take it, your answer would be the same, that at least as far as the tentative plan to build Colstrip 3 and 4 at Colstrip is concerned, the elements of the Siting Act were not considered in that selection?" Answer: "I think that would have to be true." That's not our witness; that's Mr. Labrie. Now, members of the board, right down in the margin, Exhibit number 267, that's the exhibit that Mr. Labrie testified about and it shows what they did as far as other sites. It's the basic big document from which the little chart was made this morning. It's title is "Basic Assumptions 350 Megawatt Site Selection." It does not say anything about two 700 megawatt sites; it says one 350 megawatt site selection and it's dated July 16, 1970. Now that is the comparison that was made of other sites in the state of Montana and, gentlemen, that's the only comparison that was made of other sites in the state of Montana, and that's the one the applicants depend upon. And I say that that does not meet, for 3 and 4 which are being built after the Siting Act, the requirements of the statute that they're supposed to consider, the nature and economics of various alternatives, and that's in and out of the state of Montana, and that's Mr. Labrie.

One of my favorite witnesses, whom I hope to read a lot from this afternoon for you, is George O'Connor, the President of the applicant Montana Power Company. And he had a few things to say on this subject. "I thought you told us yesterday that you and the other high officials from Montana Power, together with a group of engineers at Butte, this Butte group, conceived Colstrip? Answer: "We did." "So you were in on the planning, weren't you?" "On Colstrip, I certainly was." "My question is, when you planned Colstrip to meet the needs as you saw them, was any consideration given to putting the plant in Wyoming?" "Not by me." "To your knowledge?" "Not to my knowledge." "What about putting it in the state of Idaho?" "No, sir." "What about the state of Washington?" "No, sir." "What about the state of Oregon?" "No, sir." "So, the fact of the matter is that the group who conceived this plant, these two plants, and I'm talking about 3 and 4 now, did not, in fact, put any thought to placing the plants in any one of those other states?" Answer, by Mr. O'Connor: "They certainly didn't." "Was this group cognizant of the fact that part of the need that you were meeting was in another state?" "Oh, yes, we knew that." "But you did not attempt in any way to consider the siting of it in another state?" Answer: "No, sir." That's all on pages 640 and 641 in the transcript.

Now, this raises what I consider to be the first of about seven or eight major questions, or issues that I want to draw your specific attention to this afternoon, and that's the fact that no outside of Montana sites were ever considered, that no alternative sites were considered in Montana after the Siting Act was passed, that the only alternative sites that were considered in the state of Montana were considered in conjunction not with two 700 megawatt plants, but one 350 megawatt plant, which I think everybody on our side would settle for handily today. This problem bothered me when I first got started in this case because I couldn't quite get it through my head how we were going to produce power here, send 70 percent of it out of the state to meet needs that we don't have -- we're back on the needs issue -- and yet and consider alternative sites and try to get it at the best place and still not have to think about Washington, Oregon or even Idaho. I couldn't understand why, if you're trying to find the best place to build a site for a power plant that's going to produce power for Seattle and Portland, that you wouldn't have to consider some site in Oregon or Washington. To tell you the truth, I don't understand today how you can honestly tell yourself that you're going to ignore considering Washington and Idaho as possible alternative sites for this plant. I'm merely telling you that the applicants have not considered those sites by their own president's testimony, and by their own chief engineer's testimony, and that the statute says they have to.

Let's go on to the next one. I'd like to look for a moment at Finding of Fact 14. This has to do with what this project really costs because you've been deluged with figures here and in the transcript, and the issue arises on issue of comparison that was discussed this morning by Mr. Bellingham, and that is whether it's cheaper, is the word we've been using in the hearing, to ship the coal by rail or to send it out there on a transmission line. And this, of course, has a great deal to do with where we ought to build the plants, the siting, and the DNR contended it might be better to send it by rail and the applicants have contended that it's cheaper to do it the other way. And one of the witnesses that I want to talk about was a fellow named Woodley, who is the vice-president, as I remember, of Portland General, and I discussed at great length with him in the transcript whether or not he had considered all the costs, and Finding Fact 14 says, "The total social, economic and financial costs of right-of-way acquisition by the applicants in comparison to railroad shipment of the coal is underestimated if resale value for residential, subdivision, farm and ranch properties are considered for many areas of the right-of-way across the state of Montana." And then, here's Mr. Woodley. We got to talking about the fact that -- he said everything would be adjusted out in the free market, and then I reminded him that we didn't really have a free market here because we had to exercise in many cases the right of eminent domain and people got their property taken without getting to set their own price on it. So I said, "Don't you and I agree that eminent domain is really not a free market," and he answered, "That's right, it's a distortion of it just like old oil versus new oil; there is a distortion, you bet." "So the fact of the matter is that in doing your study, since you presume eminent domain and are not sure whether these social and cultural costs are in there, you really have only discussed and only assured yourself that the cost in dollars to Pacific General Electric Company are the ones that are going to be covered and cheaper, not that the total cost to society of the project, or the total market value of the costs of that project is covered; isn't that what you've done? In other words, we've been hearing figures about what it's going to cost these five companies. That's what they tell us this project costs, and that's what they mean when they say it's cheaper, but they have not told you and nobody can tell you; it's a matter of your discretion being exercised, what this project really costs the people of Montana in the long run, including the future look at the environment and ecology?" And Mr. Woodley's response was, "Yes, I think that's what I've done." In other words, he has included the costs to his company into the other companies, but he has not adequately addressed himself to the social and the cultural and the societal costs which this project encompasses.

Now, let's look a minute in conjunction with the cost of the transmission line at Finding of Fact number 16. The alternative of using existing railroad right-of-way systems as opposed to taking two 150 foot additional right-of-ways across the state of Montana represents a significant and substantial economic benefit to the state in terms of property values, land use and future development without a significant loss of future employment or development. In other words, the Northern Plains people are saying here that it would be better to use the existing right-of-ways of the railroads than to build two new 150 foot right-of-ways across the state of Montana. It would be better from the economi benefit point of view to the state of Montana. And I want to talk just a minute about witness Brunner, who is a Realtor and this i redirect after he'd been cross-examined by Mr. Ross of the applicants: "I tried to explain this to Mr. Ross. If I may take a little time -- let's put a power line through the Blackfoot River drainage, and we will destroy land values, and we will forever degrade the scenic values of that valley, and we have saved a little money sending the power to Oregon, rather than doing it some other way. The point is that the land values will forever be brought down in the valley." A little later on he says, "So the net effect to me on the economy of the people of the area and of the entire state is greatly diminished by the power lines. That's why I say cheaper is to the Montana Power Company; cheaper is not to the people of Montana and to future economics." Question: "Actually, is a power line then, in your view, more expensive to the people of Montana?" Answer: "Tremendously so." "And a railroad for example?" "Sure, the railroads are there; we can't complain about them. The people have learned to live with them. They've been there since 1860. The power line is not there." Then a little later -- that's on page 7050. And another point in the transcript, Mr. Brunner said, "I'm saying the damage extends for much further distance to other property owners." He's talking about the transmission line. Question: "But that, in fact, in many cases other property owners don't get compensation at all, do they?" Answer: "Absolutely. They suffer the consequences and get "zip" out of it." Question: "What you're saying is that if this power line is put 400 miles across the state of Montana 300 feet wide on these big steel towers, that a lot of people that sit just off the line or off a few miles even are going to suffer damage even though they may not be compensated." He said, "I would say that is absolutely so. They'd be much more realistic if they started talking about a mile or a mile and a half in width." So the point is that they've pumped into the equation of what this power line costs and have figured as part of the "cost" that's cheaper, a 300 foot right-of-way, but here's a Realtor who says what I guess we all know, and that is that a lot of people more than 300 feet from that power line are greatly damaged, or the visual aesthetics in the valley, which in the West is perhaps more important than other places, is damaged and it's incalculable the real damage that's done, and that's the damage that's not in Mr. Woodley's equation. So then you have to say to yourself, "Now, wait a minute, if it's -- ." Mr. Bellingham said this morning, and I wrote it down, it's about 300 million. Over the life of the project -- he had some marvelously high figures this morning -- over the life of the project, $2,221,000,000 by rail, $1,830,000,000 by power line, so 391 million difference over the life of the power line, but he didn't consider anything except the 300 foot right-of-way. Do you folks realize that when you build this double 500 kV line, and friends there is not a 500 kV line in the state of Montana now, that you're going to cut the state of Montana right in half from Colstrip to Hot Springs, and every time one of you go north and south you've got to go over or under that thing. If you fly, you can go over it. That thing is a fence in a sense that every Montanan from now on -- what's that worth? I don't know, but neither did Mr. Woodley, as he admitted on cross-examination, and neither do the lawyers or the applicants know what it's really worth. You have to decide, and that's why Mr. Meloy says he doesn't envy you your decision.

Let's have a look at Findings number 32 and 34. Well, I've just been talking about that, but here's a finding that fits that point. We're talking about land use impacts under section 816(2a), and you're supposed to decide about the area of land required and ultimate use, and we think you ought to make a finding that says, "The transmission facilities, consisting of two single circuit 500 kV overhead transmission lines, 430 miles in length, 300 feet wide, will represent in terms of the number of persons affected a major land use impact, environmentally and economically on the state of Montana, and I guess I just read you what Mr. Brunner said about that.

Number 34 says, the statute says, that you have to decide whether -- about the consistency with existing and projected nearby land use. You have to decide about this project as far as consistency with existing and projected land use, nearby land use, is concerned. We think you ought to have a finding that says, "The transmission lines will have a substantial adverse economic impact in the reduction of property values in the area across the state through which the transmission -- wherever it passes." Now, Mr. Brunner was a kind of an interesting witness. He sells a lot of Western ranchland. Question: "In other words, you think the effect of putting this line in might be broader. In the area immediately encompassed by the line it might discourage persons from buying other land in Montana, not that land, other land in Montana?" Answer: "Sure, absolutely. No question about it." Question: "That's the effect you mentioned to Mr. Ross, something about prices. You said that these recreational type ranches are selling from $200 to $1000 an acre, with an average of $500 to $600 an acre. What is the effect on the magnitude of change that the power line through a ranch like that might make?" Answer: "It's a value judgment and I think this is why in my testimony I presented my credentials. I have sold more recreational land than any other broker in Western Montana. So I guess, I hesitate to use the term expert, but I am guessing and I'm becoming an expert in this, and because I'm looking at it through Eastern eyes I believe I'm double qualified. I really believe, honestly and firmly, that depending upon the individual ranch, and this has some bearing, that you're going to see anywhere from 25 to 50 percent reduction in the present value by these lines." And then, I'm not going to spend the time to read it to you, but he goes on in this cross-examination and he points out that if you reduce the value of many of those ranches in those beautiful Western valleys by 25 to 50 percent, and if over a period of 100 years those ranches, say 250 ranches that might be affected, turned over two or three times, you have really lost a lot of money in terms of land values. I mean you haven't, but the people who own that land, if they turn it over again and again, simply can't get the same amount of money for it, and so there are real economic losses far and away in excess of the price of that 300 foot strip of right-of-way. And that's what Mr. Brunner testified to; there were other witnesses testified to, and all I'm trying to say to you is in these findings that there are great costs to this project far and away above the billion dollars that we can add up on these five applicants' account, and you are the board of directors looking over their board of directors' shoulder and you have to decide whether the rest of us in your corporation should suffer the penalty and the losses that are bound to occur if we do it that way. You have to decide if that's the best way to do it under this statute.

There's another issue that was touched upon this morning by counsel. Mr. Peterson said that there are all kinds of studies in here that show that these lines, these 500 kV lines, are safe, and he said there are studies by C. T. Main, and there are studies in the record by C. T. Main, saying these lines are safe. But C. T. Main is an electrical engineering firm whose business it is to build these kind of transmission lines. Now near the end of the hearing, through Mr. Couchure of the Power Company -- I asked him if he knew of any studies being done in the United States to test the safety of 500 kV lines, and he said he did and he knew about two such studies. One is a study being conducted nationally by the New York Public Service Commission. It's a hearing that's still going on; it's been going on all spring and will end some time this summer. It's a major effort by that public service commission to find out what the safety is of EHV lines. In addition to that, Mr. Couchure testified that he was aware, although he didn't know much about it, of a study being done by the National Science Foundation, which is a group of scientists who do make value judgments which later have a way of becoming imbedded in EPA and other governmental regulations as what's safe and what isn't in the world. Both of those agencies are doing such studies, and in the record you'll find Northern Plains Resource Council Exhibit number 25 and it's the testimony before the New York Public Service Commission of a fellow named Dr. Robert Bescher of Syracuse, New York. And I'm not going to read much of it to you, but they tell how they have for years been experimenting with electrostatic and electromagnetic effects on rats and other things, and he comes to some conclusions. I'm now reading from page 16 of that exhibit: "In regard to persons residing near the right-of-way and within the zone of field strength of 1.5 volts per centimeter or higher, they would run the risk of having some biological effect induced as a result of this exposure.

Since the effects we noted experimentally indicate that the field acted as a stressor, I would have to assume that the effects would be harmful." Then he's asked a question about periodic use by the public of the right-of-way, and his answer is, "In general, I would be opposed to multiple use concepts until the extent of the biological hazards have been ascertained." And in this study, which is the only medical type evidence in this record on this issue, this Syracuse doctor testified before the public service commission of New York that a 1.5 volts per centimeter level is the level that he considers the safety margin, but there are about three places in this record which were pointed out in the cross-examination where applicants' technical witnesses have pointed out that the level under the two 500 kV's is 2.5 volts per centimeter. So the point is that the line as engineered exceeds the only safety standard that's there any evidence of in this record, and what is being suggested to the New York Public Service Commission as a safety standard. Now that's the only medical testimony about the safety of these lines, and that's why our applicants opposed and cross-examined the power company on their concept that you should play Little League baseball under these power lines. Now that's the second major problem that I see, the dangers that may be inherent in these lines which we haven't any in this state, and there are studies being taken care of all over the country to find out whether in the long run they should be, not necessarily done away with, but perhaps fenced off or reengineered in some manner, raised higher; I don't know what the result would be, but I'm saying you don't either. And I'm saying while the National Science Foundation and while the public service commission of New York are trying to find out what the safety standard is, how can you be so sure that you should let them build a line that has not met the safety standards that are being talked about?

Now another problem that's similar to this arises, and that's the centerline problem, and since we're talking about the transmission line and its dangers I'd like to spend a minute on that. I think Dr. Clark mentioned this morning the problem of where the centerline is. Now the truth of the matter is that we don't know where the centerline is of this line; today we don't know and there are, just as Mr. Peterson said, great reams of maps in the record, and there is in the good old Westinghouse report a preferred and two alternate routes sketched out on the map, but nobody knows where it's going to be yet. And I'm talking about the corridors, and after you find the corridor, as some day they'll ask your board to do, then nobody knows where the centerline is going to be. Now, let me tell you an experience I've had on the Broadview end of this thing. We have some condemnations going, and there is a district court in the state of Montana; it's opinion is under appeal; it is a district court that's already said that whatever the board said about the centerline is it and that it's too late to argue as far as the individual landowner is concerned whether that's a good centerline for him or not, which means that the court is saying that the issue of whether the farmer's barn or his hay meadow should be crossed, or whether the thing should be moved 100 yards one way or the other in the centerline, that issue plus the issue of whether the corridor is in the right place weatherwise or communitywise, that those issues should be settled before this board, and my friends we haven't even talked about that and this hearing won't be over this decade if we get into that I'm afraid. But I'm telling you that the issue that Dr. Clark raises about where the centerline is is not settled, and I'm telling you that all the people that live along that line haven't had their day in court on that. Well, in a sense I suppose the court said they had their day because they could have come and said something, but honestly we haven't even thought about that yet, and one reason is the applicants have literally not even told us exactly where the corridor should be. They tell us they don't have enough weather information yet, and you heard him -- I think it was Mr. Peterson said today, and it's right out of the transcript, they want another year's weather data. Now, my friends, if they want another year's weather data, that's fine with me. They are absolutely right. Their weather consultant, MRI, Meteorology Research, Inc., begged them in a letter which is in evidence here to let them have another year to figure out exactly where the line should go, and they haven't done so yet. So they come and ask you to approve the plan, including the transmission line which you're being asked to approve, before they got the evidence. I said, "Well, how do you know," and they said, "Well, we can do that later. If it isn't good, we'll fix it up." That's what they keep saying. But I'm telling you they haven't got good weather evidence. I don't need to argue about the icing and all of that stuff. They haven't got good weather evidence by the very letter of their own meteorologist who says he hasn't got enough evidence yet to guess well. Mr. Peterson said, and, Jack, this was so good I just have to mention it --

He said, "As far as ice is concerned, this line was designed for more ice and more wind than any other line in Montana." Well, I should hope so. We've never had a line like this in Montana. It's a whole lot bigger, it's going to hold a lot more ice. If you drop it, it's a whole lot worse. It's got to be designed. The question isn't whether it's designed better than any other line in Montana; the question is, is it designed adequately and their meteorologist says he doesn't know for sure. He'd like another year. So I think on the route problem, they haven't met the burden of proof. They have not told us where it will be, and I don't think you people should have to guess and I don't think we should have to guess. I think they should say, and they haven't.

Let's look at Finding of Fact number 45. I go through these pretty fast once I get started. Actually, on the page before, on page 10, the statute says that you're supposed to consider "the impact on population already in the area," not to mention population attracted by construction or operation. So you're supposed to consider the impact on population already in the area, and I want to talk a little about 45. "The agricultural community of Colstrip is being eroded in a piece by piece fashion making it difficult for those now remaining to endure the loss of farm and ranch units and results in a decrease in the demand for agricultural equipment and agricultural support services." Now, one of the witnesses who lived down there, Mr. Bailey, explained it this way, and I think this is important. These are my clients now, the ranchers, and it's important to understand their viewpoint, and for those of us who live far away and certainly, I'm sure, for those in Portland and Seattle who need power, their needs might not loom very large. But here's what they think. This is on page 6591 in the transcript. "The loss of one member of an agricultural community destroys a portion of the stability of that community; a domino effect results. When the first landowner goes, it makes it tougher for those remaining to endure. This piece by piece erosion of my own community is very real and ongoing at the present time. What viable alternatives will remain open to Montana when it is no longer economically feasible for those in agriculture to pursue their ambitions in Eastern Montana? We must reassess the situation and arrive at a compromise." He isn't asking that they not have the 350 megawatt plant that Mr. Labrie planned in 1970. He's saying we must arrive at a compromise that will allow some controlled, responsible development, but not have a runaway situation which will lead to complete destruction of our agricultural communities. Approval of these plants will set a precedent that will make it even harder for Montana to hold the rein and establish an acceptable level of coal development that will be compatible with agriculture. Then the university professor, Professor Gold, says it this way. He's talking about the Colstrip community, the people that lived there before the project. "They don't seem to have a voice in what's going on about them that's anywhere near adequate. Things are being done to them, rather than with them. They feel passive and reactive and for people who are Emersonian, self reliant types, such as Eastern Montana ranchers notably are, that's a terribly humiliating position to be put into. They are being put into what they call themselves a childlike, reactive stance and that tends to be debasing, degrading, a loss of manhood type of experience as far as many of our rancher informants are concerned. And their collective interests are involved because their established social systems are in the process, from their standpoint, of being disrupted." Now, that isn't the evidence; that's the conclusions of these two people as to what's happening to the ranching community and why they are concerned, and I don't think that any evidence has been put in that it isn't happening. The only issue is, is it worth saving? That's really been the issue, and again you have to decide them. In conjunction with that, we have to think a minute, it seems to me, about Colstrip and what's happening down there. Now, one of the facts that really amazed me when I found it out is imbedded in our proposed Finding of Fact number 42. The current population of Colstrip is 2362, having risen from a population of 200 in 1970. The current population of Forsyth is 2465, having risen from a population of 1873 in 1970, and in Rosebud County it goes ahead. Now, the point I'm making is this. You've been to Colstrip and you've been to Forsyth, so have I. And the changes that have taken place in Colstrip are from 200 to 2300 and Colstrip literally is within a hundred people of the same size as Forsyth, and yet, if you read the record, you'll find out from their own experts that since it's a company town, it's got six businesses and I think four buildings, and you know, Forsyth is a normal town with a couple of theaters and a lot of bars and a restaurant and a normal situation. It simply is not the same thing, is it, but they're the same size, and when I mention that to my clients, they tell me, "Yes, but the fact is that the impact has almost been worse on Forsyth than it has on Colstrip because it changes things so much in that town, and the growth there isn't as much merited, but the help in Forsyth has not been nearly as great financially." And the impact is not merely an impact on Colstrip; it's an impact on Forsyth. We had a school superintendent who told how his community had gotten its taxes raised. He's at Lame Deer, not Colstrip, but 12 miles away. The taxes went up in his school district, but none of the money came back to his school, and yet he got some impacted students. There are a lot of people in Rosebud County that are being bothered besides the people of Colstrip, but I think it's important to see some of the things that are happening. Colstrip is a company town. There's been a lot of talk about it being a company town; is that good or is that bad? You heard some talk this morning and it says here in the record that things are going to be the same in 3 and 4 as they were in 1 and 2. As far as Colstrip is concerned, it would be about the same. If it's going to be about the same, why is the Montana Power selling -- or the Western Energy -- why are they selling off Colstrip? Literally, you can buy anything in town if you pay the price. Why are lots 7000 bucks in Colstrip and you can buy them now? If the company town has a good concept, that's what the White report says, why aren't they keeping it? If the company town isn't a good concept, why did they testify it was? I raise these questions not because I think Colstrip is terrible or that it -- but I think it raises an issue of credibility. I think it's hard to believe what we have heard in this hearing about the good company town, which we must now get rid of, about the wonderful services to the people of Colstrip which the people of Colstrip had absolutely no governmental body have anything to say about. There's no local democracy there. We've got reports that are written by guys that come in from Denver and tell them what to do. I want to read a little bit because I think it gets to this issue of the credibility of Western Energy and of Montana Power about Colstrip. I want to read a little bit from the transcript on page 3351. The witness is a man named Harold Beisel. If I remember correctly Beisel is a Westinghouse man who came out and did a survey and he came back and did another one just before he testified a couple of months ago. Question: "You say on page 8 of your statement that, 'In addition to residential and commercial construction, Western Energy provided the opportunity for the development of a community swimming pool.'" This is a continuation of the question. "Is there a community swimming pool in Colstrip?" Answer: "Not right now. There's development of a community center." Question: "You said, 'provided the opportunity.' That's the secret key word here, isn't it?" Answer: "Yes." "In other words, they haven't provided a swimming pool, have they?" Answer: "No, not yet." "They've only provided the opportunity. In other words there's a building that someone could put one in in the future, is that it?" "Yes, sir, they can." "All right, now, Doctor, you say that they have 'provided the opportunity for a movie theatre.' Is there a movie theatre in Colstrip, Doctor?" "Not that I know of." Question: "You say they have 'provided the opportunity for a bowling alley.' Is there a bowling alley in Colstrip, Doctor?" "I don't believe there's one in the community, no." "All right, Doctor, let's be honest with each other. Candidly, are you using the words 'provided the opportunity' to imply that the Western Energy Company has done something about these things when, in fact, these facilities do not exist in that company town?" Answer: "The facilities do not exist. The opportunity for having these facilities there does, and Western Energy Company supports that." Now, there were a lot of sociological studies by Westinghouse people about Colstrip, and they all talk like that. I could take you five pages back in the transcript to the part where he says, "We assume that all the workers will be from Montana, and based on that we did" so and so. I said, "But they weren't all from Montana." "No, but our assumption --." I said, "So your assumption was wrong?" He said, "No, our assumption was right because that's what we had is an assumption. It's the right assumption; it's wrong facts." Now, friends, I'm telling you that there's a lot of double talk about sociology and community impact as far as Colstrip and Western Energy Company's city planning and so forth is concerned. There's a town down there as big as Forsyth with six businesses in four buildings, two of them grocery stores both in company owned buildings, and not a bar in town, one out of town, not owned, up the road a mile or two. Now, that's not a normal situation. There's no place to get a shave; that's in the record. There's no place to get an oil change; that's in the record, and the people commute to the job. I'm not concerned. You can always build a barber shop and you know you can fix that. You can always put in a station where you can get an oil change if that became important in the hearing. You can fix that. I'm talking about the credibility of Western Energy Company and what they're doing down there. Why have they suddenly decided, when there's another project in the offering, to sell the town? I suggest to you that it's because of the profit motive, not because of the sociology involved.

Now, let's look at Finding of Fact number 62. You're supposed to consider, among other things in section 816(2f), the geologic suitability of the site or route, and our proposed Finding of Fact 62 says, "The commissioner of state lands in Montana does not conclude that the findings of the Board of Health and Environmental Sciences makes McKay coal unsuitable for marketing, but only that Colstrip units 3 and 4 were not designed to burn McKay coal and meet the state's air quality standards, notwithstanding the fact that underlying the Rosebud coal seam there are substantial deposits of McKay coal." We'd like you to find that. Now, I suppose by now, because we've raised quite a lot of fuss about it in the other hearing, everybody here knows that you've got the Rosebud coal overlaying by anywhere from 20 to 150 feet of overburden, 22 feet thick of black coal, which we've all seen, and almost exactly coexistent with it, underneath it, is the McKay seam 12 to 15 feet of dirt below and again 8 to 9 feet thick of black coal. And I presume we all know that the applicants propose to pull over, let's say an average of 60 or 75 feet of overburden with the big crane that we saw, or backhoe, dragline -- I'll get it right in a minute -- lay that all aside, mine with the big steamshovels the 22 feet, and then instead of taking off the 12 feet and getting 9 feet of coal, cover up the 60 feet of overburden, reseed it, level it, plant it with trees, hope against Ross Toole's expectations that it will rain, and reforest it and leave 9 feet of coal in the ground. You have to decide not whether they can have a mining permit -- that's up to the other board -- but you have to decide on the geologic suitability of the site. And the testimony of Mr. Schwinden is interesting on this point because the land board has temporarily given them a permit. The point of the finding is that they've made a finding that they can mine it that way, but they haven't made a finding that the McKay shouldn't be mined necessarily. Mr. Schwinden, who is the Executive Director of the land board said: Question: "In early 1974, was the land board or were you aware of the fact at the time the Montana Power and its engineers, the Bechtel Company, were engineering, in order to burn a 60-40 Rosebud-McKay blend -- were you aware of the fact that in early 1974 they were planning to burn a 60-40 Rosebud-McKay blend?" Question: "At the Corette Plant?" That's the one in Billings. "No, at units 3 and 4," which is the question. "Restate the question, please. Were we aware that they were planning to burn a 60-40 blend? Was that the question?" "Right." "I was not aware." "In other words, they made an application to you to mine just the Rosebud seam in the early part of 1974, you're saying?" "Right." Question: "I've just handed you an exhibit, I think that it shows that it's DNR's Exhibit number 17 -- I guess it was in the Board of Health part of the hearing -- and it's dated April 30, 1974. And if you read the first sentence or two, you'll see that they were still considering that the plan was still then to build a plant that would burn a 60-40 blend of Rosebud-McKay coal. Do you see that in the exhibit?" Answer: "Yes, I do." "Now, are you telling us that when the application was made to the land board that you were not aware that there had been extensive engineering to be able to burn the McKay seam right in Colstrip 3 and 4?" "Well, if my recollection of the time frame is correct, the application preceded this particular letter, but to the best of my knowledge I have not seen that document before, and I was not aware that there were studies or specifications being drawn up for a 60-40 Rosebud-McKay blend." "Now, Mr. Schwinden, I'm going to show you DNR Exhibit number 32 from the Board of Health hearing entitled 'The Effect on Reliability of Different Systems on the Annual Costs of the Power Plant.' This is another exhibit that was put in evidence in that case and I call your attention to sub-point 4 on the first page. Sub-point 4, where it says, 'Fuel burned is a blend of 60 percent, 40 percent; is that the one?" Answer to question: "Yes, yes." "Now, that exhibit is from the engineers for Colstrip 3 and 4, and it shows, I believe, that at the time the engineering was done, they were intending to burn a blend of Rosebud and McKay coal. Were you aware that the type of engineering had been done to allow the McKay coal to be burned in Colstrip 3 and 4?" Answer: "No, sir." A little later on: "Were you aware that there was a discussion as late as June of 1974 about further tests of the McKay coal to see how it would respond in the boilers of Colstrip 3 and 4?" "I'm not sure whether you're referring to the test burn that was ultimately held at the Corette Plant. Is that what you're referring to?" "Yes." "Okay. There were tests held at the Corette Plant. They built a pilot plant there, they called it, to test various reactions to the coal. The pilot plant was a small mock-up of Colstrip 1, 2, 3 and 4 and the venturi-type machine there, and they've burned various amounts of coal over a long period of time." "They had test burns there. Are you aware of that program?" Answer: "Right." "All right. Now, the notes refer to the possibility of extending that program to include a special burn to determine the properties of McKay coal as applied to the test pilot facility. Were you aware that there was discussion about a special test run on McKay coal to see how it would react in a pilot plant?" "I think my answer would be no." Then I showed him Exhibit 29 of the DNR -- same thing -- no. Here's the summary: "Was the land board in your office ever made cognizant of the fact that these tests had been done, what the results would be if Rosebud and if McKay coal were burned in units 1 and 2?" Answer: "Not to my knowledge." "Was the conclusion reached by the land board without the knowledge that you've just said and that you've testified to? In other words, without knowing about these Bechtel tests and without knowing that engineering had been done for a 60-40 mix?" "Well, I've already testified, Mr. Graybill, to the best of my knowledge that this particular information was not made available and was not known to the department." "Now, when the department reached its conclusion that the McKay seam was not marketable, it knew at that time, did it not, that Peabody was in fact marketing the McKay seam?" Answer: "Yes." A little later on: "So some energy company in the East was able to burn the McKay coal and turn it into electricity successfully?" Answer: "The answer is that they certainly were using it and I assume successfully." A little further on: "Did the land board, if you know, consider burning McKay in Colstrip 3 and 4?" Answer: "Did we consider burning it?" "Yes." "Not at the time." Now the point is that the land board, when it made that decision that they could go ahead and mine only the top layer, which Mr. Schwinden goes on to point out is a year-to-year decision -- at the time they made that they didn't know that there had been a lot of testing to see if we couldn't burn McKay coal here. Now, then, you may say, "Gee, I didn't either." That's what I said. And you know the applicants brought and put on a witness called Mr. Raben. Mr. Raben was the Vice-President of Combustion Engineering Specialists -- or whatever it is -- CES, I think it is, anyway the people who built the venturi scrubbers. I said to him on page 3028 in volume 23, the Board of Health Hearing: "My question is, if you were told -- as the engineer that built the venturi scrubber -- if you were told to prepare a system that could use McKay coal -- you believe that it's perfectly possible to prepare such a system, don't you?" Answer: "You could design a system." Question: "It's a matter of cost and what perimeters you might have to change or extend in terms of the requirements or the pre-requirements, or prerequisites, that the company laid down; isn't that true?" "Yes, it's a matter of cost and a careful evaluation of the available data and design perimeters." What I'm pointing out to you is that you can burn the McKay coal. The problem is you can't burn the McKay coal and build as cheap a scrubber as they want to build, that's all. They're burning coal in the East with much higher sulfur content than ours. That's in the record; I presume most of you know that. The issue isn't that they can't burn the McKay coal; it's that they don't want to burn the McKay coal because it will cost more initially in the plant. Now, my friends, we're down to the issue again of cost to these five utilities versus your roll as directors of the state of Montana, cost to society, cost to Montana's future, adequate and intelligent utilization of our resources, and you have to decide whether it's smart to leave the McKay coal in the ground and cover it up because it is possible to burn it, but they haven't engineered that plant yet and haven't asked to build that plant. Now to my way of thinking on that issue alone, you could say, you know, "I don't mind your doing it, but let's do it right." That's all we're asking in that instance. We're saying that you ought not to bury a seam of coal that's only 12 feet below the surface, after you've removed 60, 70 or 80 feet of overburden. And you realize that if you do burn the McKay coal in a blend of some kind, or as they do in Wisconsin, straight, you realize that then you would really literally have to dig up approximately one third less land, because you'd have one third more land coal mined in the same area. So this is the fourth major issue in my mind that you have to decide, and that is, are we, as a society, doing the right thing to build Colstrip this way? I'm not talking about whether they have a right to be a good utility, whether they have a right to keep their costs down as low as they can. They should. They work for a whole lot of stockholders. They ought to make a profit. They need power. I'm not arguing that need; Mr. Shenker can take care of that. I'm arguing that you have a duty to make them do it right and make them do it well, and I'm arguing that it's ridiculous to bury 9 feet of coal when they mine 2½ feet in England thousands of feet underground. It's ridiculous to bury 9 feet of coal when you've removed the overburden and 22 feet above it in order to save a half a percent on sulfer content that you can build a plant to remove if you want to, and if you'll pay that price now through these companies' capitalization rather than saddling society with a coalfield half developed. All right, I get excited about coal. Let's go on.

Number 70 takes up another natural system. You are enjoined by the statute 816-2 to consider the effects on natural systems. We suggest a finding that says, "The Yellowstone River ecosystem --" Mr. Shenker pointed out to me that in some of Mr. Peterson's and Mr. Bellingham's comments a Freudian slip appears. They have E-C-O-N, econsystem; it's ecosystem; it isn't a dollar and cents economic system; it's a riverine ecosystem. In other words, you know, I don't know who dropped the "N" in on you fellows, but try to get it out. "The Yellowstone Riverine ecosystem is fragile and already suffers damage during low water periods. Further water takings at such times adversely effects the riverine ecosystem." Now, I'm not going to go to our witnesses on that. Our witnesses certainly think that the ecosystem is damaged if you take too much water out. Let's listen to Frank Dunkle, their expert, on page 3957. The question is: "You would agree with me as a general principle that if we knew -- whatever -- I'm saying that if we knew the mean -- but if you knew what the necessary water was to sustain the ecosystem, that any major diversion of that water would tend to degrade it. I don't say destroy it, but would tend to degrade it." Mr. Dunkle says, "Yes, I would have to agree with that theory." I've read you the last few lines of about five pages of getting that out of him, but he did admit that as a practical matter, if you knew what you needed to maintain the ecosystem, if you take any more water out of it, obviously it doesn't matter how much you take, you're hurting it some. Now, there's a lot of testimony in the record here that the water is very low in some times of the year, mostly in the wintertime and also occasionally in August, and surprisingly enough the low water figures are not from our witnesses; they're from Mr. Dunkle. 990 cubic feet per second, I think it is, is the lowest figure, and that's his figure for Nichols, not ours, in the wintertime. On page 3948 we talked to Mr. Dunkle again and I said, "In conjunction with this Northern Great Plains study, the text explains that there was a group called the 'Instream Needs Subgroup' which discussed this issue of whether or not a minimum flow needs to be established. They defined instream water needs as the minimum amount of water required in a stream seasonally to maintain essentially the existing aquatic resource and associated wildlife and riparian habitat. Do you agree that's a proper definition of instream minimum flow?" "Yes, I would agree with that definition." Now, that's normal. This exhibit happens to be applicants' Exhibit 165. It's put in from my witness, Mr. Gibbs, of the Department of Reclamation, but Jack Peterson was cross-examining and he put the whole exhibit in, and I really can't fault him for that because it's got a lot of good stuff in it, but it does have their name on it instead of ours, so you can't always tell where the good stuff is in this case. But anyway, in the back of the book here, if you look this exhibit over you'll find an outfit called the "Instream Needs Subgroup Report," and in the front you'll find who's on that and, man, there's a lot of experts on it, and they came up with a chart telling how much water you need in the Yellowstone from Clarks Fork to the Big Horn and from Big Horn to Miles City, and it's on page 19 of their subgroup, and all I need to tell you is that they think you need a lot more water in there than Mr. Dunkle says is in there in the wintertime. Instead of 990 they say you need 1950 in January and February. At one place from Big Horn to Miles City you need 3500. So all that demonstrates is that the riverine ecosystem of the Yellowstone is in fact now at a minimum level much of the year, and if you start taking water out of there, you're degrading the riverine system. Now, how much are you degrading it? I don't know. Mr. Dunkle said he -- you know -- it gets degraded every year or so when we have a real bad dry spell or a flood. And I said, "I agree." Don't misunderstand me. The riverine ecosystem gets degraded lots of times. The question is whether you as a board should let them degrade it sometimes in addition to the other natural or unnatural, or whatever kind of degradation there is. The very fact that six -- well, I shouldn't say that, I've got some farmers on the board -- but if a crazy farmer happened to dump a lot of fertilizer in the river and ruin the ecosystem -- you've got that down, Dave -- we all agree that's bad, but that is not an excuse for somebody else to do it and what I'm saying is that that river system does at times get low and you have to consider that ecosystem.

Now that we're on that, let's skip along to 75 and talk about what I think is a very serious problem. We're talking about water resource impacts. The Northern Plains Resource Council has been particularly concerned because of their constituents down there with water. And what this finding -- we propose a finding that says this: "The two surge ponds for offstream storage at Colstrip units 1 and 2 have a projected summertime capacity of 19 days and a wintertime capacity of 26 days. The offstream storage for Colstrip units 3 and 4 is no larger than the offstream storage presently being implemented for Colstrip units 1 and 2, and is inadequate to protect against the low flow periods occurring on the Yellowstone River." Now your board is familiar, those of you who have been on it for awhile, with the facts that you had another hearing about 1 and 2 and that you insisted that the surge pond be increased. Our witness, William Day, testified on page 7572 about this. I think probably what we're doing here is setting a precedent for the type of offstream storage that could affect other applicants for industrial purposes, and I'm going to have to use some figures. In approval of units 1 and 2, the Board of Natural Resources made it mandatory that you have a 50 day offstream storage supply, and that 3 and 4, you're not increasing that offstream supply, and therefore, I think, this is contrary to good planning as far as developing our water resources in this region. I could argue this -- you know, it used to be more; it's now 19 days to 25 days if you need to write that down. Now, I could argue that you must have had some good reasons for making it 50 and that simply leaving the same size pond obviously cuts down the value of it. But I got some unusual assistance this morning from my good friend, Jack Peterson, again, because Jack pointed out that -- here it is -- Jack pointed out that he's been worrying a little about whether he had enough water in the reservoir, especially since we can't get it to fill up, which is another problem I'll come to. Jack worried a little and he said, "Besides we have some water available in the Tongue drainage that we own, and all we've got to do --" But wait a minute, the Tongue comes into the Yellowstone below Nichols, so when they start talking about the Tongue, we're back into one of these little problems that "we'll fix up" but certainly is not fixed up yet nor properly projected. There's a big ridge over there. Are they going to build a pipeline and move that water from the Tongue several -- I don't know how far, but a long way? I don't think so. Jack says, "No, what we're going to do is release a little water in the Tongue and kind of exchange it and let that go down, and we're going to really dry up the river at Nichols, I guess if we really need it." That's his theory. That leaves a little gap in the Yellowstone; now let's not forget about that. You know, let's not create a crossing of the River Jordan there just below Forsyth. But I think it's more serious than that. I'm not sure they can get that water out of the Tongue. I'm going to tell you in a minute -- I'm going to read you from some other testimony here. The Indians claim the water in the Tongue, and there's somebody got to win a lawsuit against the Cheyennes before they got that water, and if the Cheyennes are as successful in that lawsuit as they were in the one Mr. Meloy reported here this morning, there isn't going to be any water in the Tongue no matter how many acre feet is reserved for the Montana Power. All I'm saying is this. I don't want to argue with Jack about whether you can get the Tongue water to the reservoir. I want to point out to you that there are lots of problems where the credibility of these applicants is in question. They haven't got the water from the Tongue. They haven't got the water from the Tongue over at the plant. There are just a lot of "ifs" and they keep saying, "Let us build it and we'll fix it up," and I'm saying that's not enough. Now, let's talk about that storage surge pond a little bit. That surge pond hardly leaks at all in the Westinghouse report, but in the middle of hearing, literally in the middle of the hearing, we got a bunch of -- we got some information from one of their witnesses and we got some letters, their Northern Plains Resource Council Exhibits 2 and 3 in the Board of Health hearing, and all of a sudden the engineers discovered, after the Westinghouse report, that there was going to be a lot of leakage in the surge pond and in the other ponds, and not just a little leakage, a lot of leakage. The disposal ponds used to say -- in the Westinghouse report they used to say zero leakage. Now it's quite a lot more than that. What happened? Right away the engineers came on, and there's evidence in there -- the engineers said, "We're going to fix it up. We're going to grout it." Now, my friends, I went down there with -- I guess I went with the Board of Health. I guess Greg went with you, my partner. But anyway, when I went down there the water was gushing through and leaking, seeping, whatever you want to call it. It seeps out of the pond, but it leaks into our mainstem, but they were grouting. They had a big machine up there; they were pumping cement and they were doing all of these things. All I'm telling you -- I agree that -- I don't think, Mr. Bertsche, that you should be testifying, but I heard you say this morning that it was leaking last week, and I'm telling you they've been grouting since July. Now it's a 160 acre plant, and some of you are farmers, and you know that a thing that big can leak a lot of places and it might be awful hard to get that full. And I'm telling you if you had any good reason for wanting that 50 day supply -- and I could go into what the charts say there and how much time in

OCT 15
OCT 31
DEC 19
DEC 20
JAN 12
FEB 1
FEB 17
MAR 1
MAY 9
MAY 30
June 21
JUL 5
JUL 19
JUL 31
AUG 18

1

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JUL 14
AUG 7
MAR 7
MAR 10
MAR 11

3

GAYLORD 83

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January it might be down and what the low year was in 1963, and then all the irrigation that's coming down the stream, and whether there's enough to cover the irrigation, and whether the irrigation season is 30 days or 60 days. We could go into all that stuff. You don't need that. You need common sense. You're going to have a big plant and you need 50 days storage, and you build a plant for it and it leaks. Then you don't add two more plants to it and say, "Gee, that's just plenty of water." I'm telling you there's a terrific inconsistency there, and you people -- it isn't a matter of whether they're a good utility doing the best they can to make it not leak, I'll grant them that. I think they've got excellent engineers. I stood next to Mr. Labrie on the trip and heard him explain. He can explain it beautifully how it's going to stop it up. All I'm telling you is it's still leaking and that your responsibility isn't to argue that they're a good company and going to try hard; you've got to decide whether that's an adequate water supply for that big a plant, and whether the downstream users should be put in jeopardy, whether the ecosystem should be put in jeopardy, whether the company is really going to be able to accomplish in the long run what it hopes it will accomplish, whether the cost of the project becomes worth it. You know, they're going to drill so many wells and they're going to keep pumping it around, but the water's going to be going this way instead of that way. Now I think you've got a real responsibility in the water problem to make them have adequate surge ponds, and I don't see that they have engineered that yet, and I don't think you should let them off the hook with a nice statement that,"We're going to try," because they haven't been able to demonstrate that they can do it yet. That's the surface water problems.

Findings of Fact 77 and 81 concern subsurface. We think you should make a finding, "There's a great deal of uncertainty and insufficient study has been done as to the effect of units 3 and 4 and the impact on groundwater systems in the area." Why do I say that? I say that because Mr. Botz, the expert for the Board of Health, says -- he tells here about the new knowledge they got out of the letters which are now Exhibits 2 and 3 in the Board of Health hearing. I said, "Based on the new knowledge, are you satisfied with the investigation of the groundwater by others as to the quality of their tests and the extensiveness of their tests? Are you perfectly satisfied with their groundwater information that you have?" Answer: "No." "Are you telling me that based on that new information you want to do other tests?" This is our State Board of Health expert speaking. Answer: "Yes. I'm not saying that I would want to do other tests, but I want to be assured the tests were done and that they were adequate to answer the questions of groundwater quality changes." There's nothing in the record that shows the results of further tests. We don't know. Their expert -- the department's expert last summer did not know about the groundwater. What are you going to do? Are you going to let them build the plant and not know about the groundwater? They say, "We'll just drill monitoring wells and keep pumping that bad stuff back in as many times as we have to." What does a native say? Here's what Mr. Coates, a rancher in that neighborhood says: "Have you had considerable experience in the area with the nature of the terrain and the nature of the soil?"

"Well, after living there for 20 years I know considerable about it." "You're aware that seepage occurs in that country when water is allowed to stand on the surface?" "Yes, sir. Due to the content of the soil which is real porous we cannot hold a stock pond for any length of time at all. We cannot rely upon it. I don't know what percentage, but I would say 75 percent or 80 percent of them anyhow aren't holding water long enough to do us any good for what we want them to do for us as far as watering livestock." Here's a guy that says that he can't make his small, little stock ponds, which as you all know you can mine bentonite as Mr. Peterson talked about this morning -- he can't make it hold water down there. But they're going to make a 160 acre surge pond and a so many acre this and a so many acre that hold water.

I think there's a serious problem about the subsurface water.

There's one finding that I skipped over and you don't need to turn back; it's very short. But it says so well what I want to say at this time that I'm going to read it. Number 12: "The use of Eastern Montana's scarce water to subsidize the water rich areas of the Pacific Northwest to which the power will be sent does not result in the minimum adverse environmental impact." Now when you talk about using our scarce water, and about having an inadequate investigation of the subsoil and about not knowing whether your ponds are going to leak, you begin to wonder, or maybe you don't wonder, maybe you know, why they didn't investigate sites in the Pacific Northwest. The point is, though, that we've got water problems with this plant.

Now, let's go on to Finding 90. Well, let's see, I'm supposed to cover here, and I'm taking too long -- I'll just cover quickly. Just bear in mind that Finding 84 talks about the Indian water rights problem. The whole Yellowstone Basin to the south of the Yellowstone is literally claimed by Indian tribes and there's a finding there, and there's all kinds of evidence in this yellow book as to their claims, and there's other evidence in the record. The Indian tribes don't admit that's everybody's water; they say it's their water. Secondly, there's a little thing called the Yellowstone Compact, which is Finding number 85, which says that Wyoming can have, I think it's 2½ million acre feet, and if they ever claim all the water they get, there isn't going to be enough water to keep the Yellowstone wet at Forsyth in some parts of the year. And that doesn't even mention the increased agricultural uses which are going on and growing rapidly in the Yellowstone Valley. Now, all I'm saying is, my friends, you've got a serious problem to decide on priorities, not that this particular plant takes a whole lot of water, but the camel's nose is under the tent and if you build this plant, and if you build a whole series of other plants planned in the Southeast part of Montana that this book envisages, and if you do all the other things that the applicants and some of their friends talk about down there, there's not going to be enough water for Wyoming and the Indians and the Montana Power and everybody else. And you've got to decide whether to put the brakes on, and take a good look at that now. The Department of Natural Resources has got a long-term study to find out what the appropriated water on the Yellowstone is. It will take 6 or 8 years to find out. Nobody knows, and those are the sort of water questions that I think you've got to cross.

Now, let's go to 90. We think you ought to make a finding, because it's certainly based on the evidence, that says this: "The Colstrip plant is unique and the first of its kind to be built, both in utilizing fly ash as a catalyst and in its closed loop water system. Whether these unique features will operate properly has not been completely tested and remains to be seen." This same witness, Mr. Raben, the Vice-President of Combustion Engineers, had written a paper which he presented --it's all in the evidence -- which he presented, I think, in New Orleans on the way to get sulfur out of smoke, desulfurization, and he mentioned in his paper several methods. He didn't happen to mention the fly ash method, and I asked him about it, and he said it was something brand new. Question: This is on page 3002 in the transcript in the Board of Resources hearing: "So the alkali and the fly ash is one of the burning issues of the technology in the desulfurization of flue gas; is that right?" Answer: "It is particularly appropriate to low sulfur coal. It's a burning edge, to quote you, in low sulfur coal." Question: "Well, as a matter of fact, the use of low sulfur coal to fire power plants is a fairly new innovation in this country, isn't it?" Answer: "That's right." "So wouldn't it be fair to characterize what we're doing here in this hearing as looking into and testing a fairly new system of desulfurization?" Answer: "That's true. It's a system that is fairly new, that depends on a substantial amount of pilot plant data." Question: "But the only major pilot plant that has been operated is the Corette pilot plant; isn't that right?" Answer: "That's correct." Question: "There's nobody else's pilot plant that you have been able to refer to, is there?" Answer: "Not specifically." "On the fly ash?" "On the fly ash." Now the point is, Mr. Raben says unit 1, the only unit in operation now, is the first unit to use this fly ash desulfurization system. Jack Peterson is absolutely right when he says that it looks like a good system because it saves buying a lot of lime or limestone, and it saves on a lot of other things in having a lot more sludge. It could be a good system, but it's a brand new system. It's as Mr. Raben described it, it's a unique system. Not only that, in the transcript at about the same pages, or on page 3000, he describes that there have been a lot of coal-fired things built in the last 8 or 10 years, but that this is the first one with a completely closed loop water system, where the water goes in and finally goes -- we use it all up and none of it runs back, and he admits that there are some problems with even that concept. Now, all we're saying here is we have a new fly ash system, never been operated on the scale that we're talking about here. They built the pilot plant the size of the one at Corette which is very small. We have a new plant that's never -- there's never been another one in the world operated in closed loop system. Now, all we're saying is when you've got two new features in one big plant, doesn't it make sense to test it? Is the thing to do to build three more of them -- actually we are building a second one; we're not arguing about that, but do we have to build two more of them before we test it? It just seems to us that with a plant as unique as this is, what we ought to be doing is testing 1 and 2 for a year or two.

All right, now I'm getting down near the end. Finding of

Fact number 110 we believe is a very important finding. The addition of Colstrip units 1, 2, 3 and 4 generating plants and transmission lines to the plants in service of the Montana Power Company -- now, we're talking here about just the Montana Power Company portion of this plant -- would increase revenue requirements with an economic impact requiring a rate increase to users in the state of 61 percent of 1974 rate levels, and for units 3 and 4 an increase of 40 percent of 1974 rate levels. One of the witnesses that the Northern Plains Resource Council presented was William Johnson, a past rate expert for the Public Service Commission. It's page 8123 and his exhibit is Northern Plains Exhibit number 17. It's all on one page, very simple, about three pages here, and what's he talking about? He's talking about what does this plant cost Montanans? Not what it costs in Washington, not what it costs in Oregon, what does it cost us to do this? And the answer is it's going to cost us to build all four, a 60 percent rate increase and that's figured conservatively. He testified that at every turn where there was a question he took the conservative view, and it's going to cost us a 40 percent rate increase just to build 3 and 4. Now, you're not the Public Service Commission. I don't place this before you asking you to make or break or change any rates. I think you have a right to know what this project will mean to people who pay for electricity in the state of Montana, and it's going to mean a tremendous increase in rates. I didn't pull them out, but I want to tell you you can find in the record if you want to, and you can find it in the annual statements of each of the five companies, evidence that the average consumer rates for 100 kilowatt hours in Montana, with the Montana Power Company, varies from 150 to 200 percent of the rates in Portland, Seattle and these other five companies. Their rates run from 50 to 75 percent of what ours are. So that when we get all through building this plant and paying our 60 percent for building 1, 2, 3 and 4 in our rates, we can expect that our rates will still be double what the cheapest are and about one and a half times what the rest of them are of the other people. What that really means is that we get to pay more for building the plant and having the trouble here, and sending the power to Portland. Now, I'm not mad at Portland or Seattle about that. Do you know why that is? That's because they enjoy an historic advantage because they're in the Bonneville Power Administration area and they've got that tremendous Columbia River electrical system that we all know about. They enjoy a tremendous advantage. Public power, as a yardstick, has held the rates down out there. Bonneville itself -- you heard the BPA man stand right here tell how they cooperate, and BPA with federal funds, cheap interest, has produced tremendous amounts of power in the Pacific Northwest and it sells them even to the public power companies out there at cheap rates. They have a natural advantage because they own the Columbia River. Now, my friends, I say to you, why don't we get some natural advantage because we own the Rosebud coal? How come, when we get all through, we still get to pay double? I think it's a fair question for you, as the overseers of Montana's stake in this thing, to look over the shoulders of the board of directors not only of the Montana Power Company, but each of the other four foreign corporations and say, "Wait a minute. How come our rates don't get some break? Where is the advantage to Montana for exporting all of this power?" All I'm saying is it isn't there, and so you have, it seems to me, the perfect right to consider the economic impact on Montana to get 70 percent of the power available for the Pacific Northwest.

Now then, leaving for a minute the Findings of Fact, I want to explain one other major thing that the Northern Plains Resource Council tried to do in this hearing. Now, maybe I should explain what we tried to do in this hearing. We tried to present evidence and see that the hearing presented evidence so that you had a valid record and transcript to work from, and we tried to see that the other side was presented, where possible, especially where it was of great concern to our farmers and ranchers, the water issue and so forth, the transmission line issue, but mostly we tried to give in the transcript -- your board -- a little different viewpoint. Now I started this long oration here by telling you that there were major changes in the last 10 years nationwide because of ecology, energy and so forth, and that our Siting Act gave you the job of determining how this thing should be done and that it's done properly in the future. And it's been kind of interesting to me this year to observe that almost all the evidence that we get is technical. We got technical evidence that, you know, just comes out your ears. And yet there are some untechnical viewpoints that can be taken of this, and so we presented a series of four witnesses, two philosophers, a mathematician and a historian, to look at this problem, the problem of the Siting Act and whether we should build this kind of a major billion dollar plant here -- to look at this problem from a little different point of view than that of an economist or an engineer, and we presented Dr. Borgmann who talked about questions of need which Art is going to talk about tomorrow. And I don't want to take time on Professor Borgmann, but I'd like to read a little of the redirect examination of Dr. Thomas Huff from the University of Montana who characterized his short statement as, "looking at the problem from the point of view of justice." And Mr. Bellingham had cross-examined him about need which the other professor talked about, and he starts out and he said -- I said, I guess: "Let's assume Mr. Bellingham's need. In other words, let's assume there's a need for the power, which Mr. Bellingham has been talking about. Doesn't that still leave us a problem, which the Board of Natural Resources has to struggle with under the Siting Act, or a series of problems. First of all, doesn't that leave us with the problem as to whether or not the rights of others are to be violated because of that need?" Answer: "Yes, of course, not only the rights of those in our own generation, but the rights of those --." I interrupted him. "Well, let's stop with the rights of those in our own generation for a moment. Let's identify some of these for the board and for Mr. Bellingham. What are some of the rights that the board still has to contend with, even assuming a need, if it's to site the plant at Colstrip?" Well, he goes on and he says, "Property rights of certain kinds are certainly involved." "All right. In other words, the property rights of people who live in Colstrip?" "Right." "And the health rights, I presume?" "Yes, the health rights." "And the rights to underground pollution?" "Yes, and the right to the basic needs." Question: "Well, the whole impact on the local community of this plant is an issue the board still has to pass upon even after it admits there's a need, isn't it?" Answer: "Of course, that's an issue of justice, yes." "And that's an issue that this Siting Act lays right in the lap of the board, isn't it?" Answer: "Yes, very definitely." "Granted a need, which we don't have to grant, but granted a need, there still is the problem of the individual rights of other property owners than the property owners who happen to be called applicants in this case, stockholders?" Answer: "Yes, of course." Question: "Now in addition to that whole set of rights that the board has to decide about, isn't there a similar set which you started to allude to a moment ago, and that is the rights of the future generations, or the whole future?" Answer: "Yes." "And what are those rights, some of them?" "Well, in order to be able to live an effective life in a liberal, democratic society and in accordance with our social ideals, individuals must have the opportunity to make responsible choices. They must live in an environment that supports them. They must find a social circumstance of the kind that supports them. They must have sufficient food and health, and they must have sufficient basic, creature comforts in order to be able to live such a life." Question: "But are you talking about the current generation? Let's talk about the future. What are some of the things the Board of Natural Resources has to consider about the future? Doesn't it have to consider whether we have created something that will change the environment that Dr. Gordon was talking about this morning, so that it will simply be a different place 30 years from now?" Answer: "Yes, of course. Yes, we have to be sure that we're -- I think it was Jefferson that once said, 'We're sort of stewards of the environment.'"

"In other words, that environment -- there will be a place called Colstrip 50 or 100 years from now, whether it's the same as today, right?" Answer: "Yes." "And the Board has the real affirmative duty here of considering whether this particular use proposed by the applicants will be fair, or just as you put it, to those people in the future generations. Isn't that what you're talking about?" "Yes." Now then, we go on and I don't need to read all of this, but he talks about the coal, which we've already talked about and then: "Isn't there a final sort of almost simplistic, but nevertheless basic question that has to be asked by this board, and that is, 'Is this the best site?' Isn't there a question implicit in the Siting Act that if we're going to determine whether a site is a useful site for a particular purpose, there might not be one a lot better somewhere else?" Answer: "Yes." "I take it from reading your statement and from your answers here that granted that there is a whole issue of whether there is a need for increased power, assuming that there is a problem of need and laying it aside, there is a secondary series of problems that you're trying to address here as to fairness to other people, and the proper utilization of the environment, and the proper influence that this plant might have on future generations, and the best use of our natural resources and the adequacy of the site itself. All of these questions, apart from the need, is what you've been addressing in your statement about justice?" Answer: "Yes, each and every one of these." Now, the reason I burden you with that little reading is that I think there's a level on which this board operates other than just whether the plant is needed, and that level is whether it's reasonable, whether it's fair, what its future consequences are going to be, whether it's going to lead to something that's not going to be good for Montana, the impact on the Western mountain valleys, the impact on the rest of the people in the state of Montana. All of those are issues in addition to the raw issue of whether these people have a right to try and build this power line as they have. Now, if it weren't so late, I would read to you the last couple of paragraphs of Ross Toole's statement, but suffice it to say that he makes an emotional plea based on our history, that it might be time to take a close look and do it right. And that's all that my clients are asking your board to do. Do it right, do it fairly, do it well.

Now, before we stop, I want to go back to my favorite witness, George O'Connor, because George O'Connor is a very candid man, and I've titled this section "The Candid Testimony of George O'Connor." Mr. O'Connor tells us what's going on in this case during the first week. Maybe we should have stopped there and just read his testimony over a few times. And basically what Mr. O'Connor tells us is that Montana Power is a utility that has a right to make a profit, and that it wants to make a profit by selling its coal through its subsidiary, Western Energy, and that it was having a hard time doing that until it built Colstrip. Now, let's listen to him, page 532, Mr. O'Connor: "The truth of the matter is that the Montana Power makes money, both as a public utility and separately as a corporate entity, isn't that true?" Answer: "That is true." "And do I understand it to be the fact that any monies made by selling coal at Colstrip would thus be monies that are made by the Montana Power Company as a corporate entity rather than as a public utility?" Answer: "That is true." Then a few pages later: "Isn't it a fact, Mr. O'Connor, that at the time this group of people in Butte conceived the Colstrip power plant project, that was the time they formed the Western Energy Company?" He said, "No, Western Energy Company was formed before we decided to build the Corette plant, not the Colstrip plants." Question: "Isn't it true that having decided to build the Corette plant, and therefore incorporating Western Energy Company, you then determined you could use Western Energy Company for another set of plants?" Answer: "Well, we hoped we would use Western Energy Company for the purpose of selling coal to a number of other plants." "And one of the sets of plants you determined to do that for was the Colstrip power plant?" Answer: "Yes, sir. That was what they intended." Then a few pages later: "What consideration did this group in Butte -- I'm talking about the Montana Power's engineering department and the management team of the Montana Power Company -- what consideration did they give to moving the coal to the coast?" Answer: "They didn't have any market for the coal on the coast." "You didn't have any market for electricity on the coast either, did you?" "No, we didn't, no." "So there isn't any point in the Montana Power's management moving the coal to the coast, is there?" "No, we wouldn't have much use for it on the coast unless we could sell it to somebody." Now that makes eminent sense and that's what he said on that page. A few pages later Mr. O'Connor says: Question: "As a matter of fact you're telling me, aren't you, that it would be hard to sell that coal, your coal, against the coal that they -- that's the people on the coast -- have available?" "Yes, sir, I think that's true. That's a fair statement," says Mr. O'Connor. "So one of the reasons that you haven't considered moving the Colstrip coal West is that you can't sell it out there; isn't that right?" Answer: "Well, I think any prudent buyer in the Pacific Northwest would certainly buy coal that is going to cost him the least money by the time that he got it burned, and that in all probability would not be coal with three quarters of one percent sulfur. That's our coal, Colstrip coal." Question: "And that coal is apparently available to the Pacific Northwest?" Answer: "Coal with less than three fourths of one percent sulfur?" Question: "Yes." Answer: "Yes, sir. Portland General Electric has bought coal like that." "They have actually purchased coal like that," I asked him. "The president of Portland General Electric told me they had purchased coal from Amax down in the Gillette area." Well, you see they couldn't sell Colstrip's coal on the West Coast because the West Coast companies could buy their coal to make electricity. I'm sorry that Montana didn't have the best coal, but it didn't, Wyoming did, and that's what was bought by the Portland General. He goes through and he describes the fact that Washington Water Power has its own coal mine, that one of the other companies is exploring for coal in Alaska. Question: "And you said that you had not bid on that -- I'm talking about the Portland coal -- because it was uncompetitive. The fact of the matter is that it was uncompetitive because they have other sources of coal better than Colstrip, don't they?" Answer: "Well, that renders us uncompetitive." Question: "Pardon?" "We can't bid in the market where they're trying to get coal at less than one half of one percent. We would not be competitive with coal at three quarters of one percent, so we're just not competitive." Question: "What are you talking about?" Answer: "Sulfur content." Question: "Well, if you feel that you can burn it at Colstrip, you ought to be able to burn it at Portland." Answer: "They can, they can burn it." "Well then, why do they have to have it with a lower percent sulfur?" Answer: "They tell us they can get it with a low enough percent of sulfur that they could build generating plants without using scrubbers, which would save them millions of dollars in construction costs, so they were looking for coal with a low sulfur content." Question: "Without the use of any scrubbers?" Answer: "Without the use of scrubbers. I am sure that they would use electrostatic precipitators, but not scrubbers for the purpose of taking out sulfur." Question: "I see. In other words, the reason that they wanted this coal with a lower sulfur content was to meet their environmental problem over there?" Answer: "Without installing scrubbers." Question: "Without installing scrubbers?" Answer: "For a saving of several million dollars that it would cost them for scrubbers." So that's why they wouldn't buy the coal over there. And then a few pages later we talked a little more about what Mr. O'Connor had done about that. Question: "You explained to us --." This is on page 892. "You explained to us that you can't sell coal to the West, and isn't it true that if you're able to build 3 and 4, you have in effect sold 70 percent of the coal to the four companies in the Pacific Northwest?" Answer: "We didn't sell it to the West, though. We sold it at Colstrip." Question: "But the effect you've gotten -- but in effect you've gotten those companies to pick up 70 percent of that power and you've sold, in the sense that Western Energy will make a sale, enough coal to fire that 70 percent, haven't you?" Answer: "Yes." "So in one sense you actually have made a sale to Washington Water Power, Puget Sound, Pacific Power and Light and Portland General without having as good a coal, by having it on the site, haven't you, of their need?" Answer: "We sold it to them on the site." "You sold it to them despite the fact that you can't sell it to them in Portland; isn't that true?" Answer: "That's my opinion, yes. We sold it to them at Colstrip where I believe we could not sell it to them at Portland." "And in this respect, you have used that valuable asset which the Western Energy Company owns in Colstrip, right?" Answer: "Yes, sir." And then finally Mr. O'Connor says and we finish this way: "Do you think that coal is a form of energy whose time has come?" Answer: "Yes, sir." This is me: "Do you think that coal is also a form of energy whose time might not -- I'll strike that." Answer: "I was going to say it anyway." Question: "You were going to say what I was going to say that it's a form of energy whose time might go?" "That's exactly what could happen." Question: "As a matter of fact it's true then, isn't it?" Answer: "It is true, certainly." "And one of the problems, at least to the Butte bunch, is that to utilize this coal resource while the time is here, isn't that right?" "Well, I think that it's prudent for any people, for any business, for any community to utilize the resource when the time is here. Before or afterwards isn't much good," says Mr. O'Connor. "You've had that in mind, haven't you, in your planning? I wouldn't say planning, your consideration of Colstrip?" "Oh, I think we're trying to use that resource, I certainly do." Question: "And at the first available opportunity?" Answer: "Well, not the first available opportunity because we've passed up some chances to utilize some of those resources that we haven't taken." "Well, the first available opportunity that Montana Power can control?" Answer: "On our system, on our own system, yes, sir." Question: "On your own system, isn't that true?" Answer: "Yes." Question: "That's really what's happening at Colstrip?" Answer: "That's what's happening at Colstrip."

Now, I think Mr. O'Connor was completely candid with me and with you, that is before your board. I have no objection to Mr. O'Connor and the Montana Power Company and Western Energy trying to sell their coal. But I tell you that they should not be allowed to sell their coal where the profit goes into their private pocket and not into their public utility pocket unless they do it right, and unless they preserve and safeguard the Indians, the farmers and the rest of us in this state. And I beg you, or I point out to you, that your board has been charged by the Siting Act under this new change in America with the intense duty of looking over their shoulders and seeing if they're doing it right. Of course they should try to sell the coal and of course they should try to make a profit, and they've tried darn hard and they've succeeded, but selling the coal right there at Colstrip and dig it, burn it and control it, and it's a marvelous situation for them. Your problem is not are they running the public utility well. I'll testify for them tomorrow or today, anytime. Yes, they're running it well, darn well. Your problem is are they running it in the best interests of the rest of the state of Montana? And that's the hard question that you have to answer and that Mr. Meloy and I aren't sure that we want to share the job you're doing.

Thank you very much.

MR. DAVIS: Any questions?

(No response)

MR. DAVIS: We will recess until 9:00 tomorrow.

(RECESS AT 5:10 P.M.)

THURSDAY, MAY 20, 1975

The hearing reconvened at 9:00 A.M. on May 20, 1976, in the Montana Senate Chambers, State Capitol, Helena, Montana, with the full Board of Natural Resources and Conservation present and sitting.

MR. DAVIS: Very well, we will go on the record.
Mr. Shenker.

BY OPPONENTS

By Mr. Arden E. Shenker
Attorney for the Department of Natural Resources and Conservation

MR. SHENKER: Mrs. Blacker, happy anniversary; Mr. Davis, counsel, happy anniversary, one and all. I am a little disappointed in Mr. Ross this morning. It was his obligation, as we understood it, to be present with the anniversary cake. Two years after the filing of the application for this proceeding, Mr. Ross did arrive with the anniversary cake in the hearing room. I'm hoping that the temporary absence means that in short order we'll have a dramatic entrance with the candles ablaze and we can have our celebration.

MR. BELLINGHAM: Excuse me, you forgot my birthday today -- the 40th, that is.

MR. SHENKER: The 49th, is it, Bill?

MR. BELLINGHAM: I wish it were.

MR. SHENKER: Mr. Chairman, and members of the Board, and members of the Department of Natural Resources and Conservation, I want to make that distinction in my opening, introductory statement because it was obvious that some of our witnesses, as they were called yesterday, had a little trouble making the distinction. Mr.

Cox, if you'll recall, testified -- and that's what it was -- rather than argument, which is what it was supposed to have been -- that the Department of Natural Resources was conducting the hearings, when he had testified earlier that it was this Board of Natural Resources which was not representative of the people, that it was to this Board of Natural Resources that he thought that the power should not be lodged, that the legislature, in fact, had made a mistake. There is a difference, of course. The Department's function is investigatory and then to recommend, and my function at this point in the proceedings, on behalf of my client, the Department, is to make argument, not to testify; however, I do say at the outset to those who will have the opportunity to rebut my comments, that if there is a single factual statement which I make in the course of this closing argument, which is not supported by a transcript reference, I challenge anyone on behalf of the Applicants, to tell me what that factual statement is, and I will supply that reference. I am, of course, fallible, and I can make mistakes based upon the same record that you and I have read.

My comments before you today are based upon the nearly 28,000 pages of evidence that is before you. I reallv haven't stopped to count each page, but you do have, as you'll recall, extremely bulky exhibits in both the hearing before the Board of Health and before you. Add those together with the practically 18,000 pages of testimony in these proceedings, and that's a lot of pages to have read.

The function of closing argument is to see if we can aid you because of the preparation which we had to do, necessarily, before the commencement of the hearing and during the course of the hearing, to draw an integrated picture out of what necessarily, in 28,000 pages of evidence, is piecemeal. There was no one of you, nor any human being alive, who could have sat and read from beginning to end all of the testimony, or examined all of the evidence that was received in this proceeding without pause. Of course, that's what we would like to do in any type of a trial or any administrative proceeding. We'd like to make a kaleidoscopic picture and then fit it all together into an integrated whole, in order to recall for you, as best as possible, what is the truth here. You are fact finders and then you must determine what is the truth. Necessarily, however, the evidence came in piecemeal and my function is to see if I can't piece it together for you in a perspective that is integrated, and that will be my function.

Even though, as I indicated, I make argument, not testimony -- I am not a witness -- on reflection, as was said in the opening statement immediately prior to the commencement of evidence in this Department's case in chief in this proceeding, the principal fact before us is one to which we are all witnesses. We are all witnesses here and today to the attempt to create a monument to a myth, a myth which already has died. The myth is that of obsolete technology always serving the future. The myth is that game playing is acceptable with the environment. The myth is that freezing predictions for the future into past patterns is the standard practice. The myth is that the patterns of the past will always be the form of the future, and now we know that that cannot be true.

Technology and change, energy efficiency, environmental need, policy planning, conservation as an ethic, and faithfulness to the mandate of statutory direction, all require us to shape the future by present decision based upon hard facts and good sense, not upon nostalgia. Nostalgia, one has said, is the rust of memory, and that's what we have underlying the application before you in this proceeding.

I wish it were possible to avoid making the piecemealing effort. I will try, in a couple of different ways, to avoid that. One is to reconstruct, if I can, the historical development of Colstrip, the idea, Colstrip, the technology, and the other, after our break this morning, is to focus with you on five different scenarios of whether this facility is needed, but there's a different kind of piecemealing, the avoidable piecemealing to which Mr. Graybill addressed himself yesterday, sometimes known, as I believe Leo said, the camel's nose under the tent, otherwise called Pandora's box, sometimes called by lawyers, the slippery slope. Once the process has begun, where does it stop?

It was Daniel Webster who said about our Constitution that if the Constitution be picked away by piecemeal, it is gone and gone as effectively as if some despot had grasped it at once, trampled it beneath his feet and scattered its loose leaves in the wild winds.

This is the first major decision under the first Major Facility Siting Act with the breadth and the scope of the Montana Utility Siting Act of 1973, now the Major Facility Siting Act. This is the first piece to be picked, which, I suppose, is the reason that my colleagues yesterday talked about how they did not envy your decision. I disagree with them, probably because I envy the pioneering spirit. You have the opportunity and the privilege to blaze new trails, and I would hope that in doing that, you do not look at false issues. In the testimony before you, a witness by the name of Sargent, a public witness, Transcript Volume 43, page 8415, recalled an incident that had slipped my mind before, of how the Owl Drugstores, some years back, if you'll remember, had the tremendous supply of unused eggs on a supply contract. People weren't buying eggs in the Owl Drugstores, so they instructed the soda jerks to say, "When you order your milkshake, do you want one egg or two eggs?" Folks who had never thought about ordering eggs in milkshakes before, of course would specify one egg or two eggs, as the case may be, as if those were the only alternatives.

There are constant examples in the argument before you yesterday in the positions taken by the Applicants in this proceeding that are one egg or two eggs, as if those were the only alternatives. For example, the issue was put to you by a representative of the IBEW, you can have jobs, or you can deny the application for Colstrip. Those are the only two alternatives, as put to you. We know that isn't true, and I'll discuss that as we go on this morning.

The issue was put to you, I think, most explicitly by the REA representatives who came yesterday. Notwithstanding the statement made by Mr. Hansen, in his argument before you yesterday, which was the same as his testimony as a witness previously, that he is not a longtime friend of the Montana Power Company, it is also true, as the record in this case shows, that the power company requested each of the REA representatives to come to testify in this proceeding and that they came as a result of a direct agreement made with the G and T, which I think has something to say about the independence of the testimony, but not the value of the testimony. Let's look substantively, just for illustration's sake, at what's a false issue, at what the REA had to say. They said, "We have two alternatives. One is that we're supplied by the government, and the other is that we're supplied by the Montana Power Company. The government can be the Bureau of Reclamation or the Bonneville Power Administration, and when the Bureau of Reclamation and Bonneville Power says, 'Even though you're preference customers, we don't want to break our contracts with industries, 20-year contracts, after all, we only have to give 5-year notice on preferences set by statute to the people like the REAs.'" The REA response to you and in their evidence presented in this proceeding was, "Our only other alternative is the Montana Power Company." That would be true except that it's not. Unfortunately, Dr. Clark, you asked the question of the wrong man. You asked Mr. Hansen and not Mr. Cox. Mr. Cox came right after Mr. Hansen. He was the one who had testified as a witness that at this very moment negotiations are proceeding between the REAs and Basin Electric for the large coal-fired generating station that Basin Electric is completing in Wyoming. What the results of those negotiations are, we don't know, but Mr. Hansen's response, that there was no power available from Basin Electric is not a correct response, based upon the evidence in this proceeding, which came from Mr. Cox, who, as the journalistic representative of the REAs, I think knew what the state of events was. I'll come back to Mr. Cox's REA testimony later.

Another example of a false issue, unit train haul of coal -- Mr. Hofacker and Mr. Pettibone, according to Mr. Bellingham yesterday, were the only folks who prepared studies, who gave you the analysis of which is the best way to go. Do we want to have unit trains hauling coal westward from Montana into coal-fired generating stations in the load centers, or do we want to build them at the mine mouth and ship all the energy over a wire? Now, as the issue is framed -- I put it to you falsely -- it says, the only place from which the coal can originate for a westward haul is in a Rosebud seam in Colstrip, Montana. Why is that? Why aren't we comparing 3% sulfur coal, some of the lowest percentage sulfur coal in the world, at the Decker Station? Why don't we compare coal from the Peabody Mine, or from the Westmoreland Mine, going westward? Why is it that we're frozen to looking at the Colstrip-Rosebud seam for comparison purposes? That doesn't make any sense. It's not the case that the only alternative to building at mine mouth is to take Colstrip-Rosebud coal, which would otherwise go to Colstrip mine mouth generating station and send that stuff west, because we know we can send it east. We have lots of contracts for that -- or south -- we have a couple of those, too, and as a matter of fact, the testimony in this case also is that given the seller's market in which coal sits today, it's also going to be sold west, and that's no big surprise, because in this proceeding is the evidence that the Seattle Public Power Company -- the Seattle City Power and Light Company -- has, in its studies, already projected for 1982, a coal-fired generating station in the Seattle area fueled by Colstrip-Rosebud coal.

Yesterday I was pleased to note that the low key approach adopted both by Mr. Bellingham and Mr. Peterson in contradistinction to the one they used before the Board of Health when some of you were present, avoided personality. I would like to keep that as the motif of argument, recognizing, of course, that the final argument before you will be a rebuttal argument to which we have no response, recognizing that the kid gloves can come off in the afternoon, and we will again be the subject of personal attack as has so often been the case during the course of this proceeding. I put it to you, that if you pound the arguer instead of the argument, then perhaps the argument can't be pounded, or, if you try, as upon the Applicant's comments upon our findings, they did, to vilify the testifier instead of the testimony, that perhaps the testimony is not subject to vilification at all, and therefore, because I repeat, that I should like to see avoided the personality attacks, when I mention, as I do now, the subject of the Applicant's arrogance, I do so, not because I want to attack personally. Arogance, indeed, has its legitimate role in society, but I believe it characterizes the position taken by the Applicants before you. It's not my word, it's not my term. It was the analysis made of the Portland General Electric Company by the Arthur D. Little Company in the report that they did for the Governor of the state of Oregon and for the Oregon Public Utility Commission. It's simply the case that the utility companies, for many years, even though regulated for the purposes of rate making, were never regulated to make their internal decisions of where they should grow, how they should grow, and when they should grow. Growth was a given.

It's a new world into which they have arrived, somewhat unwillingly and lately, and therefore, it is understandable that their response should be that of arrogance. Those who were not accustomed to having people tell them when, where and how they could build and grow, and those who knew that growth was a given, certainly would not be willing to consider with you that growth per se need not be good. It is clear today from the economic analyses of the witnesses who have testified in this proceeding that the patterns of the past are not the fields of the future, and where it appeared that the expansion of energy was the harbinger to the expansion of economic growth in society, the economists now tell us, according to the evidence in this proceeding, that in order for society to grow economically at all, energy growth will have to be curtailed, and that's, of course, rather simple arithmetic today.

One billion dollars for the Colstrip units 3 and 4 -- fifty billion dollars for coal-fired generating stations now on the planning board, to be constructed in these United States right now, and doubling in ten years, and doubling ten years after that, and doubling ten years after that. Now, tell me where that venture capital is going to come from, and at whose expense? We're going to solve the problem internally if we permit that kind of growth to happen -- we're going to solve it too late, of course, because, having spent the money for the financing of those colossal generating stations, we won't have the moneys to build the industries who are powered by those generating stations. We won't even have the money to finance the installation of the sprinkler irrigation system which is supposedly in need of that power. That's an example of how the field of the future is not guided by the pattern of the past.

Now, let me see if I can turn, in this kaleidoscopic picture of the evidence of a year and a half -- because that's how long it's been that I have been in the evidence gathering business for this proceeding -- it began with discovery. I have, for Mr. Bellingham, not knowing that it was his birthday, an anniversary present, but at least, you know, it can serve double duty and also be considered a birthday present. My first quotation from the transcript of this proceeding will be from his words, Volume 1, page 193. Mr. Bellingham was explaining in his opening statement how Colstrip came to be, and he said: "After studies of the various sites, it was decided to build -- oh, I shouldn't say sites, but site, because it automatically went along with 1 and 2. The examination of sites was not a particularly extended matter at all. It was obvious 3 and 4, the logical place, as far as location was concerned, should be put where 1 and 2 previously had been." Bill, of course, was not a witness in this proceeding, he was only the predictor of coming attractions. That was the function of an opening statement made on the first day of the proceedings. I don't even contend for this statement that it was a judicial admission, binding upon the parties. What I contend for it was that it's an actual prediction, and I really don't understand why anybody is making such a big fuss out of hiding that fact. Of course, it was obvious that 3 and 4 were going to go where 1 and 2 were, and of course it was obvious that there were no environmental considerations enshrined in a single piece of paper any place in anybody's file, and they've looked, before 1 and 2 were built. Why should they? Nobody ever had to tell them before where they were going to build or why or when or how, and 3 and 4, indeed, came automatically.

I think we could together write the script for a meeting that took place in August of 1972, among the five who became the Colstrip project management, the five utility companies. They met in August of 1972 in Spokane. A memorandum of that meeting was the basis upon which they entered into the Colstrip compact for the units 3 and 4. Mr. O'Connor, according to the memorandum of that meeting, was presiding. Presidents and Executive Vice-Presidents of the five utility companies had assembled, and I think we could hear Mr. O'Connor saying, "Come to Montana. Here's a state (in August of 1972) where we have no Siting Act. You have no filing fee to pay. It's our own coal that we can use. It's our own development. We own the town. We already have two other units there, shortly to be approved. We know that we are going to need those facilities, because we're doubling our energy growth every single decade. We know that the Bonneville Power Administration will build the necessary interconnecting transmission because it was already in the budget of the Bonneville Power Administration whether units were going to be built in Montana or not. The transmission interconnections were in the budget in 1971. We know we don't have to worry about sulfur oxide standards. They haven't been adopted yet, and we, the Montana Power Company -- it's still George O'Connor speaking in the script that I think we could have written -- we've told the Western States Coordinating Council, this overall amalgam of all of the utilities throughout the western United States -- we've told them that if you fellows don't go along with us in the building of these two 700-megawatt generating facilities, we're just going to go ahead and build our own, another 350-megawatt facility." That's why it appears in the report, the Western Systems Coordinating Council, four years ago. That's why it appeared in the long-range planning documents filed by the Montana Power Company for each year until the commencement of this proceeding, that they would build another 350-megawatt facility if the two 700-megawatt units didn't proceed.

Act II, April 1973, again, in Spokane, Washington, we have the memorandum of the meeting of the five, and I think we could have written that script, too. Mr. O'Connor, again, was presiding, according to the memorandum of that meeting. The memorandum, by the way, curiously didn't appear in any of the files of the Montana Power Company, although they're the Colstrip project management. It was memorandum that we had to get from the files of the Pacific Power and Light Company. The script reads, as I think we could write it: "Well, we now have a Siting Act in Montana, but the filing fee is only one-half of what they would charge us in the state of Washington. It's true that we're going to have to worry about sulfur oxide standards, but the sulfur content of our coal that we'll use, that we own, is sufficiently high that you have to put in some awful strong scrubbers, wherever else this coal might be sent, and therefore, this sulfur needs our site. The scene would continue to play out that we promised the Board of Natural Resources and Conservation and we promised the Board of Health and Environmental Sciences and we promised the legislature of the state of Montana that we would not build beyond the Colstrip units 1 and 2, so let's be quiet about our intention to proceed with the Colstrip units 3 and 4. Let's disregard our second thoughts on how fast we're actually growing now in the spring of 1973. It looks like some of those patterns in the future may be different, and we, the Montana Power Company -- George O'Connor still speaking -- refuse to guarantee the scrubbers that we're going to install for pollution control in our systems. Now, we have to put those scrubbers in, mind you -- and I'll come back to this history when I get to the environmental impact aspect of the discussion -- we have to put those scrubbers in, because we're stuck with them. We backed into them on Colstrip 1 and 2 by retrofit." I'll come back to that. "We're also telling the Department of Natural Resources and Conservation in long-range plans that the Utility Siting Act is requiring us to file now that we're going to build a 350-megawatt facility and/or an additional 100 to 150-megawatt combustion turbine, irrespective of what happens on the Colstrip units 3 and 4. Maybe what we should do, fellows -- the scene concludes -- is to expand our rate basis. That is, after all, the manner in which we serve our stockholders, isn't it, expand our rate basis so that on a fixed given return on that rate base, irrespective of whether we need the power, or sell the power, we will have a continuing right to service the needs of our stockholders, and besides, we know we can always sell the power. They need our surpluses in the Pacific Southwest, to the tune of 1500 megawatts on an annual average basis from the Pacific Northwest to the Pacific Southwest for the last fifteen years.

Now, off in the wings, the two companies most experienced in fighting over siting proceedings, PGE, PP&L, are somewhat bemused, so their testimony tells us, after the memoranda of those meetings, that they knew -- they knew, in 1973, before the application was filed for this proceeding, that although it was said that the years 1978-1979-1980 were the crucial years for which these generating facilities were needed, they would never come on-stream within that period of time. They knew it. They said so in their board meetings. The minutes are replete with those references. They are in evidence, and it was said, as well, within the corporate strength of the Pacific Power and Light Company, that although the facilities were carried on the books of the Colstrip project management as costing some $360,000,000, the basis on which a filing fee was paid initially, Pacific was budgeting itself for a minimum of in excess of $500,000,000 for the generating stations alone, leave aside the transmission lines, and knew, according to the President of Pacific, that you couldn't build a coal-fired generating station for less than $500,000 per megawatt, which, of course, means a $700,000,000 generating station. Add on to that the transmission lines. It's not inflation caused by a departmental study that has cost these facilities what they have. It was a deliberate understatement of them that differs from the actual cost.

After those acts were over and the minutes played out, then the Applicants sat down and said, "We had best do what we can to expedite." The manner of expedition was to hire the Westinghouse Environmental Systems Department, as had been done by half a dozen other similarly situated private utilities in the country, to prepare an environmental analysis, which, it says in the comments of the Applicants upon our proposed findings of fact, was intended to justify the decision that had already been made to proceed with the Colstrip units. As a matter of fact, the environmental analysis, the evidence is, was intended by Westinghouse, as instructed by their clients, the Colstrip project management, to show the federal government how to prepare its environmental impact statement, because, you see, that's still to come, a point to which I will return, but in many ways, the decision which the Applicants wish you to make in the posture in which you are placed today is almost a moot decision. There are permits still to be obtained, irrespective of what you have to say, environmental impact statements still to be written by at least two federal authorities, a whole team, a coordinating team, on behalf of the federal government, still not yet dismantled, sitting in Billings, waiting for their opportunity to write their environmental impact statement, and among the permits that the Applicants sought not to obtain -- they didn't get one from the Forestry Service, although they're going to cross Forestry lands -- they didn't get one from the Indians, although they have to cross Indian lands -- which is enough basis, by the way, all by itself, for you to say no on the certification of these proceedings under the statutory section that says whether the agencies, federal and state, certifications have been obtained, the necessary government permits.

Leave that aside for the moment. It's not really my function to give you the way out from making the decision on the merits. I think the decision should be made on the merits, as well as whatever procedural bases you determine -- let's look at the certification by the Board of Health and Environmental Sciences. Before we do that, just a word about the subject of delay.

In September of 1974, the evidence is, although Bob Labrie, to his dying day will deny that he ever said it, the consistency with which what he said, according to the memorandum that's in evidence, and what everyone else was saying at the time, is amazing. PP&L was saying the same thing with respect to the Jim Bridger unit in Wyoming. Washington Water Power Company was saying the same thing with respect to a coal-fired generating station with which they had a consortium interest in Idaho. What was said in 1974 -- the instructions from the Colstrip project management to the prime contractor, Bechtel -- slow down, we're slowing down, because of two reasons, No. 1, the economy. We can't afford these units the way things are going. We can't raise the money in the market. Losing our double A to single A and sometimes not even keeping an A rating on our bonds means that we can't float the bond issues that we need in order to finance these, and secondly, we now find out, in September of 1974, we've been wrong about our load forecasts, which means that of course the original idea that Pacific and Portland General Electric knew that '78-'79-'80 were not years that the Colstrip units could have met anyway, turned out to be fortuitously quite happy in the planning, because we don't need those units in those years, anyway, as I'll indicate to you in the discussion after our break this morning.

Mr. Goldhammer testified that in addition to the two primary reasons, the diminution of load growth, and the fact that financing had gone out of sight, there was additional reason, too. Construction materials and skilled laborers were either on strike or growing scarce.

Now, let's look at the Board of Health and Environmental Sciences certification, which I put to you as a basis on which you should deny the Applicants' certification here.

First, as a matter of law, there exists no animal under the Montana Utility Siting Act in Section 7810(1)(h), or any place else that says that the Board of Health is entitled to make a conditional certification. It's a rather simple statutory scheme at that point. The rest of it is more difficult, but at that point, it's a rather simple statutory scheme. The Board of Health is supposed to say yes or no, and it said to you, maybe. That's insufficient. That's point one on the certificate from the Board of Health. If you wish to take the certificate which they did present to you, that's what you want to call it. Their first conclusion of law was that the Applicants would utilize only coal from the Rosebud seam which will at no time exceed 1% inlet sulfur content, to be daily tested. How? Now, know what the Applicants have chosen to test. Theoretically, they construct what the sulfur is going into the system -- no actual measurements, a subject to which I'll return in looking at the environmental impact.

Let me repeat, what the statute says to this Board on this subject is you must find and determine that the Board of Health and Environmental Science, which a court here in this county, the district court, Lewis and Clark County, Montana, says: "The Board of Health is the duly qualified air and water quality agency here," that it, quote, has certified that the proposed facility will not violate state and federally established standards and implementation plans." That's an easy job for you. That's a yes or no function for you, too, if the Board of Health hands you a piece of paper which says, "We hereby certify that the proposed facility of the Colstrip project management for the Colstrip units 3 and 4 will not violate state and federally established standards and implementation plans," you've finished your part of that job. Do you have such a certificate?

You have to stand on your heads, turn around twice and torture yourself into a new contortion, to accept the Applicants' inference that the words -- and let me quote them for you -- Mr. Peterson misquoted them for you yesterday -- I'm sure not intentionally -- in Finding No. 25 from the Board of Health -- I mean what I've just quoted. I mean that statutory stuff. The words are: "The Colstrip units will project compliance with the standards." No reference to the implementation plan, and what does "will project compliance" mean? Are they going to violate? How do we know, based upon that finding? I know what the words, "will project compliance" means to me -- it means, we certainly hope so, and it also means that we, having the enforcement power of a Board of Health, if we were acting under the Clean Air Act of Montana, requesting a permit to be filed by these applicants, would insist that certain things be done. That's fine. That's what the Board of Health is supposed to do under the Clean Air Act of Montana, but how does that help you?

Conclusions 1, 2, 5 and 6, filed by the Board of Health and Environmental Science, require testing. Who is paying for that? They don't say how. What we do know is, to be judicially recognized, tomorrow the Board of Health and Environmental Science meets. On the agenda is their dispute with the Montana Power Company, which insists, on behalf of the Colstrip folks down at units 1 and 2, they don't have to pay for any tests, and we heard yesterday that there was going to be monitoring on a constant basis! We'll come back to the kinds of tests that were performed with respect to Colstrip unit 1 itself. Further, on the Board of Health and Environmental Science certificate, you can look, but you will not find, any finding at all that these applicants will comply with the sulfuric acid mist or photochemical smog or ozone oxidant standards. Now, the applicants, of course, know that, and that's the reason that they moved the Board of Health to reopen the proceeding in order to have special findings made by the Board on those particular issues. The Board said, no, we wouldn't do so, in part, because the basis on which you sought to reopen the hearing was the testimony of Dr. Lawrence Faith, and we rejected his testimony. Therefore, ever resilient and diligent, the applicants have before you asked that you make those findings and muddy into the Board of Health function by determining whether those standards have been met, standards on which the Board of Health specifically refused to comment. They were proposed to them in the applicants' findings. They were not accepted by the Board of Health, not included in their findings. They sought to reopen and that was rejected, and now they're back before you. Of course, what it means is sulfuric acid mist, photochemical oxidant standards, have not been certified by the Board of Health. The applicants tell you that's not important. The big problem in sulfuric acid mist is that it's the crazy brainchild of a couple of crazy scientists, and ozone problems? They don't really exist, which is an interesting part of the applicants' argument and goes hand in glove with another to which I'll address myself.

This part of the argument says,"Listen, there are some standards in Montana we care about and some we don't. Therefore, the one in which the Board of Health has made no finding is one which you shouldn't care very much about, because it's not a very important standard." The other part of their argument, the one which devastates the statute, which makes entirely surplusage, Section 7810(l) (c), is the argument you heard from Mr. Peterson yesterday that says: "We need objective tests to determine whether we have met the minimum adverse environmental impact standards. We cannot accept subjective tests." The only objective test is the standard that's been adopted. If there is no standard, then there is no test, and there cannot be any standard less than what's enshrined as the state Ambient Air or Emission Source standard. All that business about minimum adverse environmental impact -- forget about it, said Mr. Peterson in his argument to you yesterday. Minimum adverse environmental impact means the standards. The legislature wasted a lot of words and time and energy, and witnesses in this proceeding were wasting their time and words and energy in coming to talk about minimum adverse environmental impact at all. There is no such thing. All we have is standards. Absent standards, we have only subjectivity. I put it to you, ladies and gentlemen, and I'll return to this point, because it's an important one, that yours is all the standard that you need, and it is a subjective standard guided by your discretion, to determine what is the minimum adverse environmental impact consistent with reasonable technology and economics of the overall galaxy of considerations. Your discretion, your legislative expertise, is brought to bear, because the elected representatives of the people of the state of Montana said that that's what you were supposed to do as your function.

Let's take a look quickly at some of the findings specifically from the Board of Health. Finding No. 26, for example, from the Board of Health, determined that there were four steps necessary for the development of a power plant pollution control system. The first step is bench scale. That's defined as a 1-megawatt type of test. That's what the applicants had at the Corette station. They called it a pilot plant, but this finding refers to it as a bench scale. The next step is a pilot plant. That is a 25-megawatt facility. They decided to skip that because they were pretty confident that they could go the right way. The third step would be a demonstration or prototype unit and that's, in effect, what Colstrip unit 1 is, and since the Board of Health is supposed to make a conclusive judgment under the statute -- the Board of Health has found that these are the four steps that have to be taken, and therefore, is it any surprise that they're still having problems at Colstrip unit 1? No, because that's their pilot plant. They've skipped from the bench scale, which they call a pilot plant, to a prototype demonstration unit, and the final step is a commercial unit in operation.

Now, you ask: what's the significance of that finding to us? It is within your discretion to determine that as a result of the findings made by the Board of Health and the certificate made to you,in adopting that finding, you cannot certify these facilities. They cannot operate with minimum adverse environmental impact, because they haven't gone through the four steps which the Board has adopted as the ones that are necessary. Or, let's look at, if you will, Finding No. 27, where the Board of Health determined that the accepted criteria of the National Academy of Engineers were not met by these proposed facilities. Now, you won't find that in Finding No. 27, by itself. You have to go back and read all the findings together. If you read all the findings together, you know that the applicants are not proposing a facility which will be 90% efficient and 90% available. You know that. Yesterday we were told that on the tests on which they were very proud, they were 75% efficient.

Finding No. 27 says that the criteria established require 90% or greater sulfur oxide recovery, 90% availability of a reliable system, one year of commercial demonstration on a 100-megawatt unit or larger, which should mean that in October of 1976 they could satisfy that criteria, an economic feasibility for operation based upon sufficient data. Based upon that finding, you can deny these applications before you. This is a finding that constitutes a conclusive judgment of the Board of Health.

And finally, if we can look at another aspect of what was said at the beginning in the opening statement, the preview of coming attractions by the Department of Natural Resources -- shifting gears, in the big picture -- I think I've just been talking about the nitty-gritty fine detail of the technology of how one board operates with another board, but shifting gears into the big picture, I put it to you that the proponents of Colstrip are asking this Board not to use Bird or the Bird facility, not to use any of those kinds of facilities. Why? What's wrong with the Bird plant? It's obsolete technology, and yet, Colstrip project management is asking you to make an irreversible commitment to one of the last vestiges of obsolete technology. Mr. Goldhammer testified that we are now seeing the end of that kind of technology. There will be new development that will require and insure far more efficient uses of our energy. Some say that this is a season of discontent in energy and environmental policy. We used to call it an energy crisis. I'm not so sure it's any less a crisis now. We just feel less critical about it, but we still cannot afford to propagate increasingly less efficient generation of power, which is what the applicants propose.

A brief vignette, as I bring to a close this first portion of the argument that I wanted to make to you, which is the kaleidoscopic picture of the hearing, the Puget Sound Power and Light -- it's been in from the first with the Montana Power Company in the development of Colstrip units 1 and 2, and it, too, like the Montana Power Company, has filed for a rate increase. Its most recent request is for a 25% rate increase, according to Jim Ellis's deposition we took. He was then the Executive Vice-President of the company when deposed; he's now the President of the company. They seek to raise another 36.5 million dollars a year. Oh, that's fine, of course. That's what it's their business to do, is to make money, but the interesting thing is why? Why do they need this additional rate increase? Puget Sound, sitting in Seattle, approximately 1500 megawatts of capacity on their overall operating system right now -- Colstrip unit No. 1 means something like nine or ten percent of their operating energy for them. Their assigned reason was increased operating costs at the two coal-fired power plants in Montana, Colstrip 1 and Colstrip 2.

I want to spend some time going with you through the findings that we presented to you, and the comments that the applicants made on our findings. I had said in the memorandum that we had filed in opposition to the applicants' findings, our comments on their findings, that we would make more explicit comment on their findings now. I choose not to do this at this time, because I'd really rather comment on some points made during the oral arguments by the applicants and by some of the public witnesses who were before you yesterday. I do that for two reasons, one is that it would just take me too long to stand here and comment specifically as to the applicants' proposed findings. Secondly, I think it tells you something when the applicants themselves didn't refer to their own findings except when Mr. Peterson began to argue, and I will comment on some of the ones to which he referred in the course of meeting the points that they made in their oral argument yesterday, so before I get to the findings -- I notice there's always the rustling of paper trying to find them, but I assume we're going to take a break in ten minutes or so, Carl?

MR. DAVIS: When would you like to break?

MR. SHENKER: I thought I'd comment for a little bit on yesterday's arguments and then move right into the findings after the break, okay?

MR. DAVIS: Whatever is your pleasure.

MR. SHENKER: Thank you.

MR. SHENKER, continuing:

It was Mr. Ross who began the argument yesterday before you, and sort of orchestrated the arguments that were to come on behalf of the proponents in this proceeding, and used the phrase, without another -- the phrase that he did use was "substantial, credible evidence." That's the administrative law test. You know, obviously, the alternative is not very attractive -- insubstantial, incredible evidence -- you're not going to use that, but the one that he didn't use, was the burden of proof. One would think, that into a huge box of 28,000 pages of evidence, all he had to do was to pick out a couple of pieces of paper on which there was substantial credible evidence and you don't have to pay attention to the rest. The test is whether the applicants have met their burden of proof by substantial credible evidence. Put a different way, in a sense, you are a jury in any civil case in these United States, or any trier of fact in any judicial proceeding where the scales of justice are in balance, right? You see that before the courthouses. That's your function, is to weigh the evidence. You toss out the insubstantial evidence, you toss out the incredible evidence, and you weigh what's left, and you see whether the applicants have borne their burden of proof.

Just as I pointed out to you, that I believe the applicants are rewriting the act by the assertion that you should ignore the phrase, minimum adverse environmental impact, except in the context of building standards, I think the consistent theme of the applicants' position from day one, which was a meeting before the initial Hearing Examiner, Mr. Sabol, at that time, in Bozeman, is without change. I think they would rewrite the entire act to read something like this. The Board of Natural Resources and Conservation shall certify that applicants for a major utility facility have promised to use good engineering practices, period. That's the act under which they are proceeding. You don't like their technology? Mr. Graybill put it somewhat differently to you yesterday -- they'll fix it up.

Let me ask the question this way. What's the alternative to what the applicants are really saying to you, not to use good engineering practices? Well, they're not going to make that kind of oath or promise or certification. What I believe they are really submitting to you is, they don't like the act. They know they have to live with it, of course, but they don't want you to hold them to it. Now, we've all learned a lot from this. Next time I would hope that there's a more cooperative attitude from the very beginning, that power planning can go on, on a regional basis, as well, but in the present posture in which you find yourselves and in which all of us find ourselves, the applicants are operating under a different act.

Mr. Bellingham, in trying to explain to you peak and energy yesterday -- and by the way, it's somewhat of a mystery to me why the applicants continue in their comments to talk about peak as a problem -- I challenge the applicants to dispute during their rebuttal what I believe to be the uncontradicted testimony in this case -- peak capacity is not a problem for these applicants in the Pacific Northwest through 1995. That's the testimony. Mr. Goldhammer put it in evidence himself, as one of the early witnesses brought in by the applicants, so why are we talking about peak? But in explaining peak and energy to you, he talked about the hot water heater. There wasn't anybody yesterday on behalf of the applicants who said anything about what could be achieved by conservation. Now, we have in evidence testimony with respect to a hot water heater, you can save 350 kilowatt hours a year, just by insulating with two inches of insulation around the hot water heater. Now, how much is that going to save? Do we hear that from the applicants? I'll return to conservation as an important thing, and indeed, Mr. Bellingham was entirely correct in pointing out to you yesterday that there are no MDU plants in the testimony. Montana-Dakota Utilities doesn't feature in this case. Why? Why isn't there a regional power plan right now in Montana for all of the utilities in Montana? REAs, the four privately operating ones? BPA? Where's the state voice? Where's the people's voice? Why aren't they all being heard? Is there something about people who live in eastern Montana that makes them less eligible for power than people who live in western Montana? People in northern Montana who shouldn't get any power rights from southern Montana, or vice versa? MDU is sacred ground onto which the MPC cannot tread?

I don't understand that that's a way to meet the statutory requirement for regional energy planning as a basis for the applicants seeking a certification from you in this proceeding, but Mr. Bellingham is right, MDU plants are not in this case. They should be.

The MPC, we are told, has the largest geographic territory of all the applicants, indeed, the largest of all the privately owned investor utilities, and the smallest load, which kind of makes you wonder, whose tail is wagging which dog. MPC is taking 30% of 1400 megawatts to service the smallest load, and if you go out to the final end, whether you take the original Applicants' exhibit of the Montana Power Company load, or you take their revised edition of their Montana Power Company load, only talking about energy, 1985-1986, that's the end of the forecast period that we're discussing here -- they show a deficit of 191 megawatts without Colstrip units 3 and 4, 191. What's 30% of 1400? That's 420, isn't it? So that at the end of that period, 1985-1986, 420 megawatts comes to the Montana Power Company to meet a surplus of 191 megawatts. What are they going to do with the rest? 229 megawatts have to go some place. It sounds like a surplus, doesn't it? It's going to have to be sold to somebody, isn't it, and if it isn't sold, on whose rate base? On what rate base will the consumers of Montana be paying, and indeed, in that very same year, 1985-1986, according to Applicants' Exhibit No. 6, February 25, 1975, at the commencement of this hearing, what are they doing in the last year? They're returning energy to Bonneville traded for peak. Montana Power Company is so rich in energy, without the Colstrip units 3 and 4, that in that year, 1985-1986, they're returning 19 megawatts of energy to Bonneville. Why are they doing that if Colstrip units 3 and 4 are really the need they thought they were?

Need was the next subject discussed by Mr. Bellingham, pointing to you correctly Colstrip units 3 and 4 are only two of 16 thermal plants planned or under construction. The word "planned" is an interesting one. I remember reading an awful lot of testimony of George O'Connor, Mr. Graybill's friend. A plan, to him, was something submitted, sealed, signed, delivered, of course, in writing. Other people think of plans as something that you thought of, discussed, had meetings on and maybe you haven't signed, sealed and delivered, but the 16 units Mr. Bellingham is talking about are 16 units that have been approved for construction by siting agencies. In addition to those 16 units, having the capacity of something in the neighborhood of 14,000 megawatts, there are some 21 other units that are being planned, many of them by the Pacific Power and Light Company, which has already made application for 10 units, nuclear and coal, in Roosevelt, Washington, for 10,000 megawatts all by itself. By the way, if you're looking for those on Pacific Power and Light Company exhibits, don't bother. Those resources do not appear on the Pacific Power and Light Company exhibits because they, like many of the other applicants, have their own way of deciding when you're going to find out about their resources. They have forms in which they do their planning. I believe our exhibits, as of March 1976, took us up through 47. That was the number of units that were under consideration at that time, at various stages of development of planning. They will select from time to time from those resources to put on their exhibits the ones on which they are planning today. Tomorrow, they'll change.

Mr. Bellingham's point is quite closely related to the one that I discussed with you somewhat earlier, the subject of arrogance of the Portland General Electric Company, according to the Arthur D. Little study. He solicits, "We don't have to pay attention to these professional planners, energy planners." He says the same thing about land use planners, too, but he's saving that for this afternoon. Did you know the utility companies have whole departments which do nothing but load forecasting, resource planning? That's the end of the proof, QED, meaning that's all he has to say. If the utility companies have the load forecasters and the resource planners, that's it, that's the end of the line. They do it professionally, do it all the time. That was the point Mr. Bellingham made in excusing them from only, quote, having under advisement, unquote, the use of the methods of the future. They require computer modeling, they require the use of econometrics, the determination of price elasticity and cost elasticity, sectoring a load, because obviously, the entire economy does not behave the same way nor the entire range of consumers behave the same way, a number of other aspects that are necessary and proper load forecasting for tomorrow. Yesterday's load forecasting was done, in many ways, easily and correctly by the companies that were to be served, but as the econometricians and the modelers and the forecasters told us in the evidence in this proceeding, perpetrating yesterday's patterns will cause us to be suspicious today if we're going to use that for the field of the future, and I ask you, why, if those models are being used elsewhere, can't they be used here? Why shouldn't they be used here? As a matter of fact, the applicants did bring in a man to whose testimony I will refer in the course of commenting on the comments in our findings, Dr. Kent Anderson, but his predictions are not the basis on which the applicants have put in their load forecasts and resources for you. Kent Anderson's predictions would cut their predictions in half. I'll bring those statistics to you right after the break that we take this morning.

I think there was something betrayed by a slip of Mr. Bellingham's tongue when he referred to the load growth of the Montana Power Company originally on Exhibit No. 6 not being as fast as we had hoped. That is the pattern of the past. You know, there are other ways for the utility to make money than to have load growth as fast as one can have. They can sell heat pumps, for one thing, a very efficient way to use energy for home heating. They're even permitted by statute to get into the loan business to enable people to install conservation devices in their homes, and they refused to do so, according to the evidence in this case.

You know, it's not our function to tell the utility companies how to make money. They can do it better than we could tell them, anyway, but load growth as an ethic, as an objective, as a purpose, I believe is inconsistent with the Montana Utility Siting Act purpose. It's intelligent energy planning that is, at base, the concern of the Montana Utility Siting Act.

Mr. Bellingham continues to tell you, and it was parroted by those representing the Montana Power Company, starting with George O'Connor, how long does it take to build a coal-fired generating station? They say, "In Montana, 9 or 10 years." What do they mean by that? They mean it's now 1976 and it was 1969 when they were looking around at the Corette station to see what was going to come next and decided not to stay in Billings and to go down to Colstrip

1, 2, 3, 4, 5, 6 and 7. The Colstrip-Pacific Northwest Study, 1970, shows all seven units. By the way, they will tell you that that's a transmission study. It was Bob Labrie doing an exercise to see how much transmission line capacity was necessary to have seven units, 3,000 megawatts, maybe 4,000 megawatts of capacity at Colstrip. Then, ask why, on February 6, 1976, a petition was filed formally of record before an administrative agency of the United States Government, of which, therefore, you may take judicial notice, in which the applicants, seeking to persuade the Environmental Protection Agency of the United States not to apply the non-degradation standards of the Clean Air Act to the applicants, saying, "We plan 3,000 megawatts of energy at Colstrip, and we're grandfathered out of the non-degradation clause," despite the fact that in their own proposed findings of fact before the Board of Health in Montana, they say, "We're applicable to the non-degradation standards. We know they apply to us."

In 1969, so the applicants' story would tell, they began the process of looking for Colstrip 3 and 4's construction and completion. Therefore, if you add ten years to 1969, you get 1979, and they're not going to be built by 1979. That's one way of looking at it. Another way of looking at is, it was in 1971 that the Montana Power Company determined definitely, according to Bob Labrie, in December of that year, to proceed ahead with Colstrip units 3 and 4, whether or not they had all the other applicants joined with them. All right, ten years after December of 1971 is December of 1981. They won't complete Colstrip 4 by December of 1981. That's ten years. That's easy to compute except that it's playing games with you. How long would it take to build a 350-megawatt unit of the Montana Power Company in Butte, but that's a relevant question. How long would it take to build a 150-megawatt coal-fired generating station in Colstrip? Not ten years. Maximum time, according to the Applicants' Exhibit No.240-H, the latest West Group forecast -- they keep coming out each year -- maximum time -- milestone, 62 months, five years, two months maximum time.

Did you hear Mr. Bellingham tell you yesterday that Montana Power Company had reduced its importation of power? Those same exhibits that I referred to earlier, the Montana Power Company energy exhibits, 6 and 6-B -- they say something very interesting about the importation of power. Do you know the Montana Power Company, according to its most recent revised edition, is going to have surpluses next year, this year, the year after that, the year after that, the year after that? In all those years, they're importing power. I don't understand that. If we're really talking about energy needs per se, why is it, in years in which they have surpluses, that is, after Colstrip units 1 and 2 arrive on stream and are supplying all the power that Montana Power Company has agreed to take out of Colstrip units 1 and 2, that Montana Power Company is still importing power for itself on top of surplus; that is to say, without the importation of power they have surpluses, that they import more power? Maybe there's a reason that has to do with the fact that they can buy it more cheaply than they can sell it. Then you can make a profit on that, but that isn't a need analysis.

Montana is an importer of energy, we are told by the applicants, but knowing that we would be shocked at that kind of a statement -- shocked, by the way, is one of the key words that we use to enjoy ourselves during the course of the proceeding -- shocked, amazed, astounded -- from time to time you'll see that dribbled through the transcript -- Mr. Bellingham had to tell you that the reason Montana is an importer of energy is that you exclude the exports. There is a tremendous amount of energy being exported from Montana through the federal government. Now, if you exclude all of that, Montana is an importer. The 27,000 megawatts of energy on the West Group forecast -- all those utilities, 110 of them in the Pacific Northwest -- if we exclude the same way, 20,000 megawatts leave the Pacific Northwest. The government can't include that, according to the same analysis, the tremendous imports that are going on in Oregon and Washington and Idaho. That's really a nonsense kind of analysis, it seems to me, particularly when the witnesses really concede, including the applicants' witnesses, Montana is the exporter, the Montana Power Company is an importer, and what's wrong with that? Citizens of Montana have a responsibility to the rest of the nation, and the citizens of Montana meet that responsibility by exporting. 8400 megawatts of power go out from Montana every year, whether through coal, water, mine-mouth generation at Colstrip 1 and 2, rail haul to the Corette station, rail haul wherever else the rails haul the coal. 8400 megawatts are going out of Montana every year, which is something like ten times what Montana uses, and that's responsible on Montana's part right now, and it may well be equally responsible for the Montana Power Company to do what the Bechtel Power Corporation told them to do in Exhibit No. 119, page II-4, which, the applicants said in their comments upon our findings of fact, didn't exist. The Bechtel Power Corporation, in its systems power study of 1964 told Montana Power Company, buy that extra power, 30%. Buy surplus power, it's a cheap way to go, and they're right, of course, the power is much cheaper to the west of here than it is here.

There was a question that was asked by Mr. Bertsche that I wanted to comment on, but as I understood the ground rules, we wait until now. I didn't think that the answer was really responsive. The question was, why was the Montana Power Company not participating in other plants? The answer was something like, we don't want to build too far ahead and we lose reliability. Well, you don't lose any more reliability by taking the power from the west to the east than you do when you go from the east to the west, so that doesn't wash as an answer, but the part about not building too far ahead could be beguiling if it were true, which it is not. There's only one coal-fired generating station that has gone into operation before now. That's in Centralia. Every other one of the 16 Mr. Bellingham was talking about, all of the coal-fired, nuclear, all the thermal, as they're called, coal and nuclear together, the thermal generating stations, throughout the Pacific Northwest, Montana Power Company is, up until 1975, a member of none -- invited by some, still considering others. Why? There are lots of potential reasons, some of which have to do with economics, and almost all of which have to do with need.

The fact is, there are 400 megawatts of uncommitted power sitting in the Skagit development under the sponsorship of the Puget Sound Power and Light Company, which the Montana Power Company is still considering -- an interesting figure, by the way -- 420 megawatts is the Montana Power Company's share of Colstrip 3 and 4, 400 uncommitted megawatts up in the Skagit units right now.

WPPSS No. 5, that's the Public Power System, WPPSS No. 5, 1000, plus or minus 200 -- they're not quite sure yet, a nuclear generating station, entirely uncommitted right now, entirely uncommitted. Why? Because the Public Power people were less sure that they had to go ahead with it for themselves. They've still got it on the drawing board. It's uncommitted. Now, Mr. Bellingham will say to you, that's a 1984 facility or a 1985 facility in another case. That won't help us in 1983. You know when they were planned for? 1982. Some of them have moved back in their schedule. A 1983 facility of Portland General Electric Company has moved back to 1986. Now, why would that be, if it were true that there was that great, crunching overarching need?

What I found most surprising, really, was the discussion of alternatives. We were told that there weren't any alternatives, that there is no hydro capacity available. 10,000 megawatts -- that ain't bad, of which, one of the best sites in the entire west, according to Mr. Goldhammer, of the Bonneville Power Administration, the Applicants' witness, was at Buffalo Rapids, 400 megawatts of capacity. Sometimes they quibble at that -- sometimes they say it's only 285 megawatts of capacity or 296, on occasion. What happened to that Buffalo Rapids application? For three years, there sat in the file, as the last item in the file, a letter from the FPC to George O'Connor, then President of the Montana Power Company, saying, would you like to let us know what your pleasure is in proceeding further with the Buffalo Rapids project? Letter unanswered. Mr. O'Connor testified at this proceeding. He explained, he didn't answer the letter, he didn't have an answer for them, because he was negotiating with the Indian tribe with whom they had desired to make a joint application for the use of the Buffalo

Rapids. The Indian tribe wants to effect ownership, the Montana Power Company doesn't want to give them ownership. The Indian tribe also wants ownership of the Kerr project, as well. They're negotiating, and therefore, it was dismissed on the FPC list, simply because it wasn't being pushed. That doesn't say that hydro isn't available. It says it's not being pushed. We know there are great advantages to hydroelectric capacity, and we know that it won't solve all of the problems, certainly not for the distant future into which we must plan. So says Mr. Buck Bellingham. Other than hydro, the rest of the alternatives are all poppycock. They're the exotica of the late 1980's. Let me tell you about a piece of technology that has been available for years, called conservation. The fact is, that these proposed facilities would utilize 3½% of the total consumption of energy in the Pacific Northwest, and with conservation, you can reduce consumption of energy by 5%. That's a rather impressive alternative.

We know that it's happened, of course. In 1973, the Washington Water Power Company voluntarily -- no forced standards -- reduced conservation by 8% in its service area, Puget Sound Power and Light Company, by 11%, Pacific Power and Light Company, by 14%, PGE by 10%. The overall states of Oregon and Washington were by 10%, so that can be done. It will at least hold back the development by one year -- by the way, that's an interesting kind of statistic. We keep talking about 5% growth, 4% growth -- 5% conservation. If you have growth at 5% a year and you effect conservation of 5%, you've wiped out one year, one year of growth. Say the applicants, that's fine for that year, but what are you going to do after that, what's your next act, what are you going to do for an encore?

Why, I have another suggestion -- how about some more conservation? Why do you do it only once, why only wiping out one year? Why do you only put the two inches of insulation around to save 350 kilowatt hours off of your own hot water heater, and stop? Aren't there other things you can insulate?

Those are, of course, in the testimony and they are in our proposed Findings of Fact. I think this may be a good stopping time, Mr. Davis.

MR. DAVIS: All right, let's take a ten minute break.

(BRIEF RECESS).

The hearing was reconvened at 10:55 A.M., following a brief recess commencing at 10:30 A.M.

MR. DAVIS: You may proceed, Mr. Shenker.

MR. SHENKER, Continuing:

Turning from the subject of need to the subject of socioeconomics, Mr. Bellingham told you two things, that the impacts from the Colstrip units 3 and 4 would be, quote, minimal, unquote. I want to dwell on that word for just a moment. The statute does not say minimal. The statute says "the minimum." Minimal means, in the dictionary sense, nothing very significant. The minimum means exactly what it says, it means the least, and his two points were, first, that all of the expected problems from the Colstrip units 3 and 4 in socioeconomic impact have been identified and corrected. Now, I challenge the applicants to give you a reference in this evidence in the 28,000 pages that says that, because the planners who were brought in by the applicants to describe for you the identification of problems, told you the process has now begun in order to conduct an inventory and in order to find out what the problems are going to be. They have not yet been identified. Then Mr. Bellingham, by back of hand reference said, secondly, "If we waited for planners of Arnold Cogan's caliber, we'd never get anything built." There are two comments I want to make in connection with that. First, the statute requires us to do so. Secondly, good planning is not a bar to building. It's only a path to good building, and that's what the statute is all about.

The evidence in this case is that if the applicants, on June 6, 1973, when they filed their application, had then endeavored to put before you as a result of two years of work, a planning process, you would have a basis on which to make an evaluation. They have not endeavored to do so and you do not have the basis, therefore, on which to make such an evaluation, which requires -- and this is the one issue in the entire case on which there is absolutely no contradictory evidence -- you are required to deny the application for certification of environmental compatibility because there is no basis on which to evaluate the impact of Colstrip units 3 and 4 because those studies weren't done. They're in the process. At some later date, one might be able to make that evaluation, if we want to reconvene two years from now, or better put, the next applicant knows that he has to prepare that information for you.

Let me move to Mr. Peterson. The question that he put before you was, why spend more money for what is not technologically advisable? Mr. Bertsche asked the question of Mr. Peterson, that he noted they were still experimenting with the nozzles. Mr. Peterson explained that there is a buildup at the wet-dry interface which is only a maintenance problem. The only evidence that we have on the record on the maintenance problem is that a little rock got into the boiler. They called it a clinker. It weighed 20 tons. That's the little maintenance problem that they've had so far with what is obviously a prototype or demonostration unit under the categorization adopted by the Board of Health in their Finding No. 26.

The history of the scrubber is something I alluded to before and said I would come back to. Now I do. It starts with the Corette station in 1964, when these applicants determined that they would install electrostatic precipitators in order to remove the visible plume from the Corette station. That's the stuff you can see, the particulate matter. There were no sulfur oxide standards in those days and they didn't worry about removing the poisonous gaseous matter. As most folks, who first put in a difficult, complicated technical process, they found when they put in an electrostatic precipitator at the Corette station, it didn't work, so they had to bring in the folks who knew how to make electrostatic precipitators work, and they reworked it, and a couple of years went by, and the Corette station was supposed to be on-stream, and finally they got it to work reasonably satisfactorily for themselves, and what happened? Lo and behold, sulfur oxide standards were adopted! By that time, of course, Colstrip units 1 and 2 were already on the drawing board, and the Montana Power Company was not about to replicate the problem of electrostatic precipitators when they came to the Colstrip units 1 and 2; therefore, they used the other well-known particulate collecting device, Venturi scrubbers. There are essentially two well-known devices for particulate collection. One was electrostatic precipitation; the other was the Venturi scrubber.

Colstrip 1 and 2 therefore were planned for particulate collection only. That's what you use Venturi scrubbers for. Up to that time -- up to now, aside from Colstrip, nobody ever used Venturi scrubbers for collecting gases. The way a Venturi scrubber works, you collect gases anyway, not very efficiently, although some folks, not trying to collect gases with Venturi scrubbers, achieve 85% efficiencies in doing so. Mind you, not trying to collect gases, they achieve efficiencies 10% higher than the applicants ever claimed they can do with a system that is intended to collect gases.

Now, it was, therefore, a retrofit system, in a sense different from the way that term is generally used. Retrofit means you have an existing plant and you've got to put something into it to cure a problem. They had existing plans, not an existing plant, and they had to back fit their plans to see if they could make the Venturi scrubber work for them, and soon, of course, they were on to Colstrip 3 and 4, by August of 1972, still not yet having had approval from the Board of Health on Colstrip 1 and 2, so the applicants said to the C. T. Main Company, to the Bechtel Corporation, among themselves -- we have the memoranda -- they're in evidence -- "Let's not talk about Colstrip 3 and 4 until we get approval on 1 and 2," which they eventually got for 1 and 2, and then, of course, they were in a rather embarrassing position. How could they propose for the Colstrip units 3 and 4 a different scrubbing system than they had already promised in connection with Colstrip 1 and 2, approved, not built, would be the best systems that they could find? They were stuck. They had to use Colstrip 1 and 2 in replica for Colstrip 3 and 4, notwithstanding the fact that some of the other applicants, Pacific Power and Light Company, in particular, because they'd had more experience in building coal-fired generating stations than any of the other applicants in the proceeding, had said, "That's not the best way to go," and Pacific Power and Light Company, through Mr. Humphreys, in evidence, said, "Fellows, don't you think we ought to hold off on Colstrip 3 and 4, particularly on the scrubbing system, until we see whether your systems on 1 and 2 work?" The Montana Power Company, with Bechtel, said, "No, we've got this retrofit system, and it's going to work just fine." Well, it's not going to work all that fine. It turns out it can't work on McKay coal at all. It can't even work on a blend of McKay and Rosebud coal, forcing them, again, to torture themselves into a position that they can only use a portion of a seam, which is probably not the best way to go, and you may so decide.

Now, says Mr. Peterson, comes 1976, they've tested it. They've tested the system after Colstrip unit 1 became operational, and they found out it works even better than they thought.

Let's talk about the test for a moment. It's really not all that difficult, conceptually, to figure out how you test. The whole idea is, prevent something that is going in from coming out. The way you test is, you measure what's going in and you measure what's going out. The inlet is the denominator, the outlet is the enumerator of the fraction, and if you take out half of what you put in, you're operating at 50% efficiency. And collection, that's fairly simple in concept. It turns out to be not so simple in the mechanics of how you do it, although there are accepted methods for doing that. No such test has ever been performed. The test that Mr. Peterson told you about was the theoretical construction. They know what the sulfur content of the coal is, there are varying rates of how much coal goes into the boiler -- furnace, so they figure out, there must be about that much sulfur going into the system, theoretically, and they take a look-see how much is coming out in terms of the sulfur content that's analyzed, and they say on that theoretical construction, we think we're around 73.7%.

Well, there's another way to do it. DNR Exhibit No. 41 follows the formula that they used. You take the pounds per hour of sulfur oxide times the equation between sulfur oxides and sulfur, the porportion between the two, times the percent sulfur in the coal, times the water content, and what you come out with is 47.6%. Now, Dr. Grimm, a witness on the stand, when I prepared this exhibit before him from the materials which he had placed in evidence, said, "I wouldn't put those numbers in there. I would plug in different numbers," but all those numbers are in evidence from the exhibits that he presented, the big one being the number of pounds per hour of sulfur oxides, which is not a measured figure, but a theoretical construction, so you take your theory on your choice and you come out with whatever number you think is the right arithmetic result. He likes 73.6. You can go down to 47.6. You can go lower, depending on what number you plug in from his exhibit figures, and that's the efficiency with which Colstrip No. 1 was operated.

Now, there's another way to find out, of course, and that's to measure, and while we're at it, we could measure for nitrous oxide. We didn't do that, and you could measure for sulfates, and they didn't do that, and you could measure for ozone, and they didn't do that.

The other question which plagues me, as I think about the applicants' claim that the Colstrip unit No. 1 operates so magnificently, if it's all that good, if they have what they call an extreme margin of safety by their own operation, then why don't they use McKay coal, if it's all that good, and you have the right to wait for that. You have the right to say, "Let's see if Colstrip units 1 and 2 really operate all that well." Give them the benefit of the doubt. Maybe they can fix it up. Maybe they can operate the unique system that no one else has ever done before, without developing little clinkers that are 20 tons in weight in the boiler. Maybe they can operate without the wet-dry interface clogging so the system will work. If that happens, and they have an extreme margin of safety, they can burn McKay coal, and close up that seam and go to someplace else.

Mr. Peterson told you that there was no witness in this case who indicated to you any problems with respect to human health. There were only two medical people who testified in the course of the proceedings. One was Dr. Douglas Hammer, an author of the criteria documents for human health, and the other one was Dr. Steven Ayres, who has an immense pedigree of work in epidemiology and in clinical public health, director of major hospitals, universities, medical schools. Both of them disagree with Mr. Peterson. Moreoever, the only testimony Mr. Peterson cites comes not from a medical man but from a biochemist, Dr. Anthony Colucci, and it is clear that Dr. Colucci, according to the evidence in Volume 40 of Dr. Hammer's testimony, is a very competent biochemist. Within his field, he should be listened to, but when he says there is no scientific basis for the denial of this application based upon human health concerns, the fact is, he doesn't know. That's not his field of expertise, and the fact is, that both Dr. Hammer and Dr. Ayres said that they thought they were scientific, and they had a basis, and their basis was that human health is in danger by the very standards that are in issue here. I'll come to those in a moment.

There is a question that Dr. Clark put to Mr. Peterson, on the process of route selection in connection with transmission lines. In effect, Mr. Peterson's response was, don't worry about it. The Forest Service and the Indians are going to require some kind of conditions, and then we'll come back and talk to the Board of Natural Resources about it at some later date. In Mr. Graybill's terms, we'll fix it up. Dr. Clark quite correctly pointed out from reading the transcript that nobody -- not our client -- offered substantial evidence on the process of route selection. What we offer, instead, is our Finding No. 337, page 43, of our proposed Findings of Fact that says: "At the time of the application for the Colstrip units 3 and 4, the prime contractor for the transmission lines -- that's C. T. Main Company -- had not made any determination of or commenced the work for determining a route for those transmission lines." Now, the statutory scheme is that this Department is supposed to evaluate what is proposed to them. There was no transmission line route proposed to this Department. There was a 2-mile wide corridor suggested, and we have nothing to evaluate. When they finish their work, they'll come in with something to propose, which then can be evaluated, which is not the basis on which this Board is supposed to do its certifying job. We're not supposed to guess at what the transmission lines are going to look like, where they're going to be, what configuration it will have, where the Mallard conductors will be used, what towers will be used where, what guy wires stretching out over what period of space, but we have to guess, because that work hasn't been done yet.

Mr. Sabol also asked a question of Mr. Peterson. As I recall, the phrasing of the question was, what is your assessment of the state of the evidence in the record on the effect of depreciation on land values? Mr. Peterson's response was that opinions differ, but a more correct answer to that question would have been, there is only one side presented on that issue. It was never countered. The only evidence in this record is that these transmission lines will severely depreciate land values. The witness who testified that there were people who disagreed with him, said nothing more than that on the question of whether the depreciation was 100%, 50%, 12%, 60%. That's the state of the record.

Now, let me turn briefly to some of the other folks who argued before you yesterday. Ron Wilkerson is back today. There were two interesting points about Ron's argument before you yesterday that were exactly the same as his testimony when he was here as a witness, as the representative, officially, for the Bonneville Power Administration, and he testified, at Volume 29 of the transcript, page 5921, as follows: "Question: You speak as a representative of the Bonneville Power Administration? Answer: That's correct. Question: By design, I take it, you do not take an explicit position on Colstrip units 3 and 4 and the need for them within the overall energy needs of the states of Montana and the Pacific Northwest? Answer; I do not take a specific position on Colstrip per se." That's Bonneville, and we understand that. Bonneville says that they don't care where the energy comes from. They don't care if it comes from Roosevelt, Washington power, produced by Pacific Power and Light, or Jim Bridger, in Wyoming, or Wyodak, in Wyoming, or if it comes from another Boardman station, or two more Skagit stations, or two more Pebble Springs stations. They don't care where it comes from, and they have not said, and they will not say -- the evidence is all in, we've heard from Mr. Wilkerson personally -- "We want Colstrip 3 and 4 built." One of the reasons they don't say it, by the way is that they have what is called a Phase 2 hydrothermal program, which predicted a number of thermal units should go on-stream, and it didn't predict Colstrip. All right, that doesn't mean you can't build at Colstrip because Bonneville says that it's not in their plans, but we certainly don't have the Bonneville folks saying, "Colstrip 3 and 4 are needed within Montana and the Pacific Northwest."

Secondly, Mr. Wilkerson tells us that 500-kV transmission lines are reasonable lines to build. The more complete way of putting it was, has he testified in Volume 29, page 5296,"before transmission line effects can be evaluated, the engineering work must be done. Further tests to determine the configuration or routing of transmission lines cannot be postponed, for then the lines could not be assessed," and that's just plain common sense, isn't it? Bonneville knows that. They have to prepare environmental impact statements when they do transmission lines. They know they have to have the engineering done in order to have them finally assessed.

Now, to the REAs. There were three representatives of them who spoke yesterday, Mr. Follensbee, from Central G&T -- there were two interesting pieces of testimony from Mr. Follensbee when he came as a witness to testify. One is in Volume 32, page 6090, in which he said: "If Colstrip 1 and 2 and a smaller generating plant --(which I will discuss with you in connection with some scenarios in a moment)-- could meet the needs for the generation of power, there would be no need for Colstrip 3 and 4," and on the next page of the transcript, he says he is not in favor, and the REA members of the G&T are not in favor of Colstrip 3 and 4 at any environmental price.

Mr. Hansen testified, in addition, of course, to his having argued before you yesterday, and his testimony is in Volume 29 of the transcript at page 5118. He explained that he understood that the Wyodak, Wyoming coal-fired generating facility was indeed a source for electrical generation, and it wasn't a Basin electric plant; therefore, he needn't have responded to Dr. Clark's question on that subject, and he also pointed out that at this very moment, he was involved, transcript 29, page 5119, in negotiating with Montana Power Company for how much they would supply to his REA.

The witness whose argument before you yesterday obviously directly critized -- I suppose I should use the word, vilified -- the Department of Natural Resources as not being representative of the public, was Mr. Cox, the journalist representative for the REA Association, and he had four interesting things to say in his testimony in this proceeding, too. Volume 26 was his testimony, page 4519. He described the annual growth rates of the REAs generally, 1.5%. Now, that's not the huge growth that you would have been made to believe. The only evidence in this proceeding as to what the REAs in Montana specifically have been growing at is that it is at a lesser rate, at a lesser rate, than that of the other purveyors of electrical power in the Pacific Northwest. Page 4525, Mr. Cox agreed that past patterns for determining the generation growth of electricity could not be the basis for a future projection. Page 4530 -- here, Dr. Clark, is where Mr. Cox pointed out the negotiations with Basin Electric on their Wyoming plant. Page 4532, Mr. Cox quite conceded that if plants were not needed within the time frame proposed -- that's up to the year 1985-1986 -- he could not support the Colstrip units 3 and 4.

Now, let's pause for a moment. You recall my discussion about the false issues that REA has only either the federal government or the Montana Power Company to look at. That's not true, but let's take a look at the Montana Power Company. According to their most recent revised edition of their energy load, they're going to grow by 452 megawatts over a decade. Where does that come from? According to Mr. Cox, 32 megawatts is the growth expected by the REAs, so why shouldn't the Montana Power Company pick up 32 megawatts out of 452 megawatts over that decade? We keep hearing from the Montana Power Company that they have a growth pattern, 452 megawatts over the decade, on their figures, and then, putting that aside, we separately have 7.3 megawatts for water treatment facilities in major cities in Montana, 32 megawatts for REAs. We have sprinkler irrigation, we have agricultural irrigation, we have pollution control systems which require power, and it's mind-boggling to think of these additional areas of growth. They are not additional areas of growth, they're part of the 452 megawatts, because absent those areas of growth, otherwise Montana Power Company's projections are wrong. They had to get their growth from some place, and this is a perfectly legitimate area for them to service.

Let me turn briefly to the subject of jobs, another false issue. Paul Polzin was the economist called by the IBEW to testify. He made it quite clear. He said, "Listen, if our concern were jobs, if that were our concern, if that were your concern, as this Board of Natural Resources and Conservation, by all means, irrespective of the economies involved, irrespective of energy efficiency, send the coal out by unit trains. You get 342 jobs versus 95 jobs, and that's the better way to go if you want to produce jobs, because coal-fired generating stations are capital intensive, not labor intensive. It's small employment." You'll note that there was no joining of the IBEW's representation by the railroad workers. To the contrary, we had the testimony of Mr. Peccia that the railroad workers would be delighted to have the unit trains used as an alternative.

I want to turn, for illustrative purposes, really, rather than for exhausting you, to our findings of fact and the applicants' comments on them. I want to call to your attention the applicants' comments, page 1, paragraph 2, line 20. "Because many of the Department's proposed findings are not pertinent, except incidentally, to the decision to be made by the Board, they deserve, and receive, no comment." I want to illustrate for you some of the impertinent or non-pertinent comments that we proposed as findings of fact and which the applicants believed deserved no comment at all, but first I want to make quite clear what are not the issues. Page 2 of the applicants' comments, line 24, they keep expressing their concern over the years 1978, 1979, 1980. Let me say it again. The Colstrip unit 1 is now scheduled to come on no earlier than July 1, 1980. It is not available for the year 1979-1980. The Colstrip unit 2 is now scheduled to come on -- excuse me -- I said 1. I meant 3, and the Colstrip unit 4 is not scheduled to come on until July 1, 1981. It is not available for the year 1980-1981.

Page 3 of the applicants' comments, line 7. Their statement is that it is against the national energy policy to use oil. It's a misstatement. The fact of the matter is, national energy policy provides that you should not run a combustion turbine facility which can be run on coal with oil. Old, coal-fired combustion turbine facilities were run with coal and converted to oil over the years past. National energy policy says, convert them back to coal, don't run them on oil. National energy policy says, don't convert those facilities from coal-fired to oil-fired. There's no national energy policy that says oil-fired facilities that are not converted to coal and have not and cannot be converted to coal cannot run at all because there is no oil. That's not national energy policy.

Now you'll notice at line 8 on page 3 of the applicants' comments that they run from finding 9 to finding 11, missing, therefore, our proposed finding of fact No. 10. This is one that they believe is not pertinent. It reads: "Those who read the Montana Power Company's projections and long-range plans should conclude that the company's loads have diminished." That sounds pertinent, if you're trying to evaluate need.

Page 3, still, line 20, the applicants' comment is that it is interesting to note for the year 1986-1987 a deficit of energy of 7 megawatts -- not true, as I'll get to in a moment, but what's that year doing in here? I really think, by the way, that that's what we've come down to, as a result of the scenarios which I'll show you in a moment. The applicants don't need the Colstrip units

3 and 4 between now and 1986. They're going to need some kind of a facility between now and 1995.

I really think that what we're looking at is, you know, the next decade's planning effort. What kind of facility should we have in the years 1985 to 1995? That's what I really think is involved, but that's not the issue before you, because this is the time frame. That is what all the exhibits show. This is the time frame, through 1986, that's the time frame that we're supposed to be planning for here and today.

Next, on page 4 of the applicants' comments on our findings of fact, they omitted our findings 18 and 19. I think they're pertinent and I'd like to read them to you for your consideration, to illustrate what the applicants believe is not pertinent. No. 18 -- "Although the Montana Power Company originally contended that Colstrip units 1 and 2 were necessary for the year 1975, in fact, without Colstrip units 1 and 2, the Montana Power Company increased its electric sales to other utilities, not the consumers," to other consumers. That's the category called sale for resale by 63% over those in the previous years. What does that show? It shows that their forecasting was off. It shows that they didn't need Colstrip units 1 and 2 when they thought they might have, because load growth had slowed down. That's why I think it's pertinent.

No. 19 of our proposed findings of fact that they believe is not pertinent says that "more jobs are created by the development of smaller megawattage generating stations than by the construction of fewer larger generating plants." I think it's relevant for us to look at the economic health of those who wish to be employed here in Montana.

As I say, I'm going through these proposed findings of fact of ours, and their comments, for illustrative purposes, and I think you can reasonably conclude that wherever there's a missing finding, it's an important one. Wherever they didn't comment on one of our findings, it's an important one. For example, missing is finding No. 30 -- no comment on that. Our proposed finding No. 30 says that during the period between 1950 and 1970, a 20-year period -- this is Paul Polzin's testimony -- when there was sufficient electrical generating capacity throughout the nation and in Montana, the presence of that factor did not effect economic activity development in Montana. Why is that pertinent? The applicants' argument is, build a generating station so we can create economic activity in Montana. The fact of the matter is, that when we did have the power available, it did not create economic activity in Montana.

Page 7 of the applicants' comments on our findings of fact -- This is the comment on our proposed finding of fact No. 39. The applicants' comment on our finding of fact disagrees whether there's going to be any serious impact on the Montana Power Company if Colstrip 3 and 4 are built. They say, of course there are going to be some problems. The point of our finding was, No. 39, according to information filed with the United States Security and Exchange Commission -- you know, there's a form that's supposed to be filed with the SEC in which a utility company says, because it's publicly traded on the stock market, what impact is going to happen on the company from future events, like, for example, the denial of the application for Colstrip 3 and 4 and they have to swear an oath that they've told the truth when they file that statement, and people rely on it. Stockholders rely on it, potential stockholders rely on it, the SEC relies on it, so we took the deposition of the man who prepared the statement, the Treasurer of the company, and he said that he relied upon all the right people when he got the data together and he pointed out what the impact was. It's in evidence. It's our proposed finding No. 39. The impact would be that those moneys now spent, legal fees for site preparation, those moneys now spent, they would amortize, with the permission of the Public Service Commission, and that's it, that's the impact, but missing is a comment on our proposed findings Nos. 37 and 38, which read: "Colstrip units 3 and 4 would be the most expensive units on the Montana Power Company system. Therefore, they certainly should not be used as peaking units." That's 37. No. 38 -- "The Montana Power Company continues to plan on the assumption that it may be required to build a 100-megawatt gas turbine on its system to meet generation needs by July of 1978." Those two fit together.

All of the companies involved here and the West Group and the Bonneville Power Administration project the needs for power on the basis for needs for critical water. Critical water means, the unavailability of power such as has not happened in the last 40 years. That's what it means. If you don't have critical water, then you have additional power that's available to you, as has happened for every time in the last 40 years in which power had the flow. Now, doesn't it seem strange to you that you want to build a base loaded coal-fired generating station to take up the slack of problems that happen once every 40 years? Isn't there a better way to do that, like purchasing power? You know, there is power that, by displacement, sent from Pennsylvania to Washington, from California to Maine. It happens now we don't have a national grid system yet, but we're building that way. That's one way. Another way, for example is to have that 100-megawatt facility built cheaply, quickly, easily used in operation, and there's enough oil to run a 100-megawatt facility once every 40 years.

As I have indicated, these were for illustrative purposes to indicate to you the comments made by the applicants. I want to skip quickly through the rest. There's one I want to stop at, because it's relevant to our scenarios. Page 9 of the applicants' comments comments on our proposed finding No. 56. The finding read: "The probable range of growth in electrical demand for the entire West Group begins at 3.3% per year." The comment is that we intend it to be misleading. Begins at means begins at. That's where it starts, and don't you think is this not the point of pertinence, that we should be working at that? Isn't that what we should be working toward, the low range instead of the high range?

The number comes up again on the next page I want to refer you to, page 11 of the applicants' comments on our findings. Line 10, they point out to you that there were two model predictors, load growth forecasters, one from the University of Washington, the former energy czar, so-called,of the state of Washington, Dr. William Brewer, the other, Dr. Kent Anderson from the National Economic Resource Associates, one on behalf of the Department of Natural Resources, one on behalf of the applicants. What Anderson said about Brewer's model was, it was a pretty good model. He liked it. There were some little things he would want to change, different inputs he wanted to make, but fairly close. Let's look at the numbers. Page 11, line 10, Brewer's model predicts growth of 1.6% to 3.1% per year through 1980 and .8 to 2.1% per year for 1980 to 1990. Now, if you want to get one number, one figure, from Dr. Brewer's range, it's going to be 1.0 for the low range and 2.3 for the high range. The way you compute that is, you determine how many years you're going at 1.6 and how many years you're going at .8. You know, the greater number of years is at .8, because that's 1980 to 1990. The lesser number of years is at 1.6 because that's 1976 to 1979. The overall average on Brewer comes to 1.0 at the low and 2.3 at the high. Now, Dr. Anderson -- skip down to line 14 -- in his case, the overall average is 3.1%. That's 5.1% for four years and 2.4% for 11 years, which is a total of 3.1%. 3.1% is an interesting number. It's exactly the amount of decrease in the West Group forecast for last year, as I'll indicate in the scenarios, essentially, now.

Just a couple of other quickies on their comments, page 12. This is an important point because it is absolutely impossible for you to understand the exhibits prepared by the applicants and find out what their actual growth projection is. Page 12, line 3 says: "In fact, it appears that the Pacific Power and Light Company is the only applicant which includes in its procedure for load forecasting out of state sales." That is called sale for resale. I don't care whether it's out of state or in state. If they're sales for resale, they're not consumer sales, and growth should be determined by consumption, not by sales. You know why that's true? If we had, as we do, on some of the applicants, for instance, the Montana Power Company, sales -- we don't on the Montana Power Company. We do on the Washington Water Power. That's Exhibit 20-B.

We do on Puget Sound Power and Light Company. That's Exhibit 18-B, but on the exhibits of Montana Power and on the exhibits of Portland General Electric Company, we do not have the category, sale for resale or exports to non-consumers of the utility itself. Now, if you have a sale to the Idaho Power Company, is that a consumer? Is that a consumer whose need you can evaluate? Only if the Idaho Power Company is here in this proceeding. How do you know what other resources the Idaho Power Company has or will marshal? How about the Utah Power and Light Company, with interconnections with the Arizona Public Service Commission, another privately investor-owned utility, or considering the 1500 megawatts that annually flow to the Pacific Southwest, what's the load of the Southern California Edison Company, or what's the load of the Pacific Gas and Electric Company in northern California? If we're going to include those sales for resale, then we've got to evaluate the whole grid. That's why you've got to exclude them. That's why Dr. Anderson excluded them in the applicants' Exhibit No. 254, which shows growth of 3.1%. When you exclude sales for resale, you have growth at 3.1%.

I'd like to move now to the scenarios that I have referred to a number of times. Mr. MacIntyre is going to do the acrobatics. It's big enough so that everybody can see it, but I also have individual copies so that you can look on your own copies, as well. (COPIES ARE DISTRIBUTED).

This is fairly complicated stuff, but there are five different scenarios on here, and I want to make very clear at the beginning -- and I hope I did this morning, when I began -- any factual statement that I have made, there is a transcript reference for and an exhibit reference for. I don't expect any one of these scenarios necessarily to happen. I am illustrating to you the points that are involved in them, and they come from the sources that are shown.

The first scenario is entirely taken from the applicants' exhibits, so that would be, in the case of the Montana Power Company, of course, Exhibit 6-B; in the case of the Pacific Power and Light Company, Exhibit No. 21-B, and et cetera, through the exhibits of the various companies. The applicants, as a whole, are Exhibits 3 and 3-C. Now, these are their exhibits. I call it base load. Careful, that's a term of art. The Montana Power Company has a different meaning for base load than anybody else. The Montana Power Company means load minus Anaconda. That is what they mean by base load, because it's been so heavily dependent upon Anaconda. That's not what I mean. Base load, for me, is where we start, that is, the load which is the base upon which you do your projections, and this shows constant growth at 3%. That's not going to happen, of course. They're not going to have constant growth. It's always going to vary, depending upon economy, and lots of other factors involved, but for the purposes of illustration, if we were now standing in 1986 and we looked back ten years, we could then say we had 3% growth. Now, mind you, Dr. Brewer, Dr. Anderson, both talk of 3% growth as a likely scenario. It's not something that's out of the range of reasonableness. Let's see what happens when you take the applicants' own exhibit and use a growth rate of 3%. You will have surpluses for all applicants, that is, the applicants taken together, all five of them, for all years, as shown in the top figure, except the year 1982-1983. For the applicants individually, you show surpluses for all years, for all applicants, with the

Washington Water Power Company for 1982-1983 having only two megawatts. That's, of course, the real desideratum, to overestimate by one megawatt. That is what they want to do. Washington Water Power Company is very close on that. The figure in parentheses is simply the addition of the five going across. Now, you ask, how can it be that when you add up the five companies' surpluses in all cases, you always have more surpluses than when you take the applicant companies, five of them together? The reason is that there's something hiding in those exhibits that isn't spelled out for you very well. Let me illustrate that.

First of all, in connection with all applicants, let's take this year 1976-1977, which is the coming year. It starts July 1st of this year. We use as the base, 6,387 megawatts for the total load. That comes from Exhibit 3-C. That's what they say their load is going to be. We increase it by 3%. That means we'll have 6,579 megawatts. They say, on Exhibit 3-C, that their resources are 6,984 megawatts. You subtract 6,579 from 6,984, and you get 405 megawatts. Now, that's just looking at Exhibit 3-C, the applicants' own figures when they take themselves together.

Now, if we take a look at the Pacific Power and Light Company -- oh, yes, I want to digress about the Pacific Power and Light Company. On Exhibit 21-A, the Pacific Power and Light Company says that for generating units planned or under construction between the time this hearing commenced and September 1985, which is the period we're talking about, they were going to have 2,955 megawatts of energy coming on to their system. Remember that figure, 2,955. Unfortunately, when PP&L first gave us their exhibits in April of 1975, they didn't have an overall breakdown of load resource so you could see what surpluses and deficits were, but they cured that in this current year. On December 15, 1975, they put in a revised edition, now called Applicants' Exhibit No. 21-B. Now, that shows that their estimated energy load has grown over the 10-year period from 2,000 megawatts to 3675 megawatts, a growth of 1655 megawatts in all -- 1655 -- but they had already told us that their resources were growing by 2955, so if they're going to have new resources of almost 3,000 megawatts, and they're going to have a new load of only 1600 megawatts, they're going to have 1400 megawatt surpluses at the end of that period, aren't they? No, according to Exhibit 21-B, at the end of that period they have a deficit of 284 megawatts. Well, something happened to their resources which they told us they were going to bring on-stream that they don't find their way into their exhibits, but using their exhibit, Exhibit 21-B, that told us the figure,2020 megawatts, was their actual energy load for 1975-1976. They had resources of 2,082, they've got a surplus of 62 megawatts.

All right, now, for the Pacific Power and Light Company, if you increase them by 3%, then, the following year, their load will be -- it's a fairly easy one to see -- 3% of 2,020 is just a little bit over 60. Sure enough, their load will be 2,081 megawatts for the year 1976-1977, when, according to them, their actual resources on their exhibit, are 2,255 megawatts, the difference being 174 megawatts.

Now, look at Washington Water Power and you can see why there is going to be a discrepancy between the total of all the companies and the five companies taken together, that is, these two figures differ from each other, and why? I exclude sales for resale. Now, I'd love to be able to exclude it from the Pacific Power and Light Company and the Montana Power Company, except that they don't have those figures in the exhibits, but I do have them in the Washington Water Power Company, so when I take Exhibit No. 20-B for the Washington Water Power Company, in the year 1975-1976, they show a system firm load of 715 megawatts. They also have sales for resale of 132 megawatts. I exclude those, because I don't think we should have to worry about the Idaho Power Company and the San Diego Gas and Electric Company and the Central Valley project, and those are their sales for resale. Now, if you do want to worry about them, we've got to have another couple of hearings, because that's a lot of additional stuff. System firm load, 715 megawatts, total resources 939 megawatts -- that should be in the upper righthand corner -- surplus, 224 megawatts, and you increase that one by 3%, that's going to show for the Washington Water Power Company that they had a 736-megawatt load the following year, with resources of 956 megawatts, according to Exhibit No. 20-B, for a surplus of 220 megawatts. Now, you could do the same thing that I've done. In order to evaluate the needs as shown on the applicant companies' own exhibits, you can take the exhibits and calculate them at any rate of growth that you want to in order to find out whatever surpluses are going to exist.

Let's take a look at scenario 2. Scenario No. 2 will be the same as No. 1 in the basic way that it was set up. The difference is, I'm changing the rates of growth so you can see how this is done. In Montana Power Company's case, I'm changing their rate of growth to 5%. In the Portland General Electric Company case, I'm changing it to 7%. In the Pacific Power and Light Company case, I'm changing that to 5%, and in this case, all applicants do not have the two different figures that I had last time around. This figure is simply the addition of the five across. I haven't made the separate analysis for the five together.

Now, let's take the Montana Power Company first. The Montana Power Company, for the year 1975-1976, has a difference of 171 megawatts. If we escalate their base load -- by the way, I made a mistake with the Montana Power Company on this exhibit. I was working from Exhibit 6 instead of Exhibit 6-B. Exhibit 6 was the unrevised edition, which showed a higher energy load, but since I'd worked out all the figures and it works towards the Montana Power Company's benefit, I knew they wouldn't fault me for continuing to use the figures of the higher load on which to base their growth, but if you assume a base of 657 megawatts for the Montana Power Company, the total resources being 828 megawatts, that's 171 megawatts as to their surplus in the first year. That's the base. You then have to escalate the 657 megawatts by 5%, which brings you up to 690 megawatts for the next year, with their resources being at 1,012 megawatts, which gives you a surplus of 322 megawatts. As to the other two that I had changed the figures on for you for their rates of growth, Pacific Power and Light Company -- let's drop down a year on that one to 1976-1977. I previously worked out for you the 3% growth. At 5% growth, the Pacific Power and Light Company would be at 2227 megawatts -- excuse me, for the year 1976-1977, they would be at 2121 megawatts. They show 2255 megawatts, so Pacific Power and Light Company for the year 1976-1977 will have a surplus of 134 megawatts. That's on 5% growth. PGE is the 7% growth. That's the largest of the ones that I've indicated.

PGE growth at 7% starts from a base in which they have a surplus of 60 megawatts. Their base is 1449 megawatts. They've made life a little bit more difficult for you than some of the other folks have, as they don't add up their resource column. Exhibit 19 of the Portland General Electric Company, they have their resources broken down, and you have to add them up to get the totals, but the total is 1509 megawatts in the first year to get the base. That's a 60-megawatt surplus. If you escalate, then, by 7%, that gives them 1550 megawatts for the year 1976-1977 against a resource base, according to Exhibit 19, of 1859 megawatts for the year 1976-1977; therefore, the PGE Company would have a 309-megawatt surplus.

Now, notice, that as previously we had a year in which there was a deficit situation, for Pacific Power and Light Company, the folks who did not add all those resources in that were on the exhibits -- remember? -- folks who had 10,000 additional megawatts at Roosevelt, Washington not added in -- they've got a deficit in the year 1982-1983, based upon this kind of a projection of 5% growth. You say, "It's probable for them, we have to provide a generating station." No, because the surpluses are so large from their other five applicants here that we don't have that problem for the year 1982-1983, at all, and the fact of the matter is -- the testimony is clear -- whoever has surpluses in any area of the Pacific Northwest, and beyond, can provide them for anybody who has a deficit, at varying times of the year. The Pacific Southwest has needs at some times of the year that differ from the Pacific Northwest, but this is an illustration only among the five applicants themselves at relatively high constant rates of growth. I remind you, this will not happen. They certainly will not happen constantly and they're about twice as high as they're going to be.

Let's turn to scenario 3, which is different, altogether.

MR. SABOL: What makes you so certain that that growth won't occur?

MR. SHENKER: Experts.

MR. SABOL: Which ones?

MR. SHENKER: Brewer and Anderson.

MR. BERTSCHE: What was the answer?

MR. SHENKER: Experts, Brewer and Anderson, but I should expand a little bit, I think -- also, the statistics.

MR. SHENKER, continuing:

Will you look at Exhibit 254, the Applicants' Exhibit No. 254, which shows the load growth without the sale for resale, even on past patterns? Now, there are really two different approaches here on this scenario No. 3. The first one is based upon Exhibit No. 48, Department Exhibit No. 48, which, in turn, had six different scenarios. Mr. Gregg will recall, he was on the witness stand, and I spun them out for him. They were based upon his exhibit, Applicants' Exhibit No. 239, in this proceeding, considering six different possibilities. Possibility No. 1 was that you would have 3% growth. We've already discussed that one earlier. Possibility No. 2 is that you would have a 3% growth, but the base upon which you begin operating would be 3.1% lower than what the applicants had told us in their exhibits. Now, why lower? Because the West Group forecasts actually reduced the loads by 3.1%, and that's the figure. That's scenario No. 2. Scenario No. 3 on that Exhibit No. 48

brought in a different resource column. It brought in the resource columns suggested by Dr. Kanu R. Shah, of the Commonwealth Associates, based upon his analysis of the applicants' own figures, again at a 3% growth rate.

Scenario No. 4, move the growth rate up to 4%, and use Dr. Shah's analysis of the companies' loads and resources.

Scenario No. 5, move the growth rate up to 5%, use Dr. Shah's analysis of the companies' resources and the companies' load growth and reduce the base by 3.1%, the West Group reduction in the overall beginning, and the last final one, was a 6% growth, with Dr. Shah's own expertise having been brought to bear on the subject.

Now, I understand that you didn't all get a copy of Dr. Shah's exhibits previously. They were all part of a bound volume like this (indicating), before we got to the transcript, and he testified, of course, so his testimony is in. The exhibits are 212-A through J and I think they may be in the last batch that was handed out to you today.

This first column, under "All Applicants," is based upon the low and high ranges of surpluses on the DNR Exhibit No. 48. There were six different possibilities that I explained to you from DNR Exhibit No. 48. In each year, for all five of the applicants together, there are surpluses. The lowest surplus is in the year 1982-1983, when we had 11 megawatts, a year in which they had 832 megawatts as the highest range of the surplus, and the highest surplus they had was in the final year in which Dr. Shah did his analysis. You see, he didn't do his analysis in the year 1985-1986 because he started in 1974-1975. He thought the hearing was going to get started earlier than, I suppose, it turned out, and that was the highest, 1777 megawatts. Now, that's from Dr. Shah's analysis of the applicants' own figures.

Now, those, of course, are constant rates that I've indicated, 6%, 5%, 4%, 3% constant rates of growth. They're not going to happen. We're not going to have constant rates of growth, so let's turn to Exhibits 212-A through J from Dr. Shah -- I have 212-C in front of me, which is the year 1977-1978. If you take the Montana Power Company in those years, according to Dr. Shah's analysis of their figures, their surplus would be as little as 99 megawatts and as much as 196 megawatts, and if you were to look at the Puget Sound Power and Light Company in the same year, 1977 and 1978, their surplus would be as little as 32 megawatts and as much as 107 megawatts. These are not constant rates of growth. These are the companies' own predictions of what their growth rates are going to be, and what their actual growth will be.

Now, the way you put this figuring together is, you take Exhibit No. 212-C, for example, in the year 1977-78. If you want to find out what the low range of the surplus is, you take the Montana Power Company and you take the highest forecast and the lowest resource. The difference is the surplus, and it's 99 megawatts. If you want to find out the high range of the surplus, you take the lowest forecast and the highest resource and the difference in the year 1977-1978 is 196 megawatts. Now, you can do that, as Dr. Shah did, for every year from 1975 through 1985 for each of the five companies. These -- all applicants' figures -- let me repeat to you, because you have copies of these, and you might get confused if you take them back with you -- let me backtrack. In the first place, this is for argument. This is because I think it's a helpful illustration to have you understand what's the need for these facilities. All applicants' figures comes from DNR Exhibit No. 48, and only from DNR Exhibit No. 48, which is six different scenarios. The five individual applicants, the figures come from DNR Exhibits No. 212. They are A through J, each letter of the alphabet for a different year. For example, 212-C is the year 1977 to 1978.

Let's turn to scenario No. 4. 4 and 5 are rather closely related to each other. Scenario No. 4, again, we look at the applicants' exhibits, "Revised Loads." That will be the second set of applicants' exhibits in all cases. For example, I have Portland General Electric and Washington Water Power in front of me. Portland General Electric submitted an exhibit, No. 19, in 1975. They revised it on December 23, but they still called it Exhibit No. 19--at least, my copy is, but there are two sets from Portland General Electric Company. In each case, for every applicant, the loads are lower, that is, that they believe is demanded upon their system -- is lower in the second set of exhibits, because they've had a reduction, and in each case, of course, I'm only looking at energy, because we don't have a peak problem that we're concerned about here.

Now, if you look at the Portland General Electric Company for the year 1975-1976, on their revised edition of load, you find that it's 1449 megawatts, but if you look at their original resources, they're higher than their revised exhibit shows for resources. Where do the resources go? Now, that's why I call them available resources. If they existed in March and April of 1975 as resources, they didn't disappear in December of 1975 as resources. What happened was, the companies chose to count them differently. I'll give you an example of that.

The first set of exhibits, PGE said, they were going to run combustion turbines for 142 megawatts of average energy -- and by the way, there was a long transcript discussion between me and Mr. Woodley of the Portland General Electric Company, on the subject of whether Portland General Electric Company runs base-loaded average energy from combustion turbines. Now, I knew that Mr. Bredemeier, who is Mr. Woodley's boss, or around the corner in the hierarchy of the Portland General Electric, Vice-President of the Portland General Electric, had told us that that was true. Woodley said, "I agree with Bredemeier about everything, and we don't run combustion turbines for base-fired average energy." If you look at the footnote on the original Exhibit 19, it says: "Additional energy available from base-loading combustion turbines, 389 megawatts." It's available. If it's available, I list it as an available resource, and that will give you a total of 1682 megawatts for the Portland General Electric Company in that first year. Now, if you subtract their available resources of 1682 megawatts from their load, 1449 megawatts, you'll have a surplus of 233 megawatts for that first year, so from their exhibits, going from the low side on on the load, to the high side on the resources, you come out with surpluses in all years for the Portland General Electric Company that are really quite large, very large, indeed.

For the Washington Water Power Company, you will have -- you know, middling-sized deficits for the last five years. For the Puget Sound Power and Light Company, you'll have some substantial deficits in some of the years, until they bring more resources in that they tell us about. For the Montana Power Company, you'll have deficits for the last three years. Yet, when you take all of the applicants together and you run between Exhibit 3 and Exhibit 3-C, which is the original applicants' exhibits on the resources, the revised applicants' exhibits on the load, you show surpluses in all years.

DR. CLARK: What happened to PP&L here?

MR. SHENKER: Ah, glad you asked.

PP&L never showed us their original resources on the original exhibits, so we don't know what their original resources were. All we know of their original resources, from the original exhibits, is that they were going to be bringing on some 2900 additional megawatts, but they didn't show us when, so we can't, therefore, fill them into specific years. I could have put something at the end line, but I didn't, because we really didn't have the breakdown from PP&L on their first set of exhibits; therefore, we really can't compute them with the same accuracy as we do the others. Your question, Dr. Clark, I think is illuminated somewhat by the next and last of the five scenarios.

MR. BELLINGHAM: What is the percentage rate of growth?

MR. SHENKER: There's no percentage rate of growth, Bill. It's the applicants' own exhibit.

On this last of the scenarios, with respect to the need projections, it's the same as No. 4 in concept. What we have done is to revise the applicants' initial load by Exhibit No. 240-H, which is the West Group forecast. Therefore, we've revised the base by 3.1%, and the same procedure was followed for all applicants between Exhibits 3 and 3-C, having revised the base down by 3.1%, and obviously, the loads going down. I have a couple of general comments to make about 4 and 5 together, and the individual company applicant, same way, except that the base is down 3.1% for its load; therefore, the surpluses are going to be bigger -- less to serve, the same amount of resources.

The common (unintelligible) under all applicants is the addition of the four across, and in each year, of course, we don't know the amount that PP&L has. We don't know, in other words, what the available resources are of the Pacific Power and Light Company for these exhibits, but we do know that it's something more than 822 megawatts this year, because the sum of these four is 822, and we know from the earlier exhibits that PP&L does have surpluses. Similarly, all the way down, we know what the surpluses are of four of the five applicants, and PP&L add something, too. Now, again, as in scenario No. 1, these figures are not the same. Why is that? Why is it that the sum of the total of the individual applicants is always greater than when the applicants submit their exhibits on behalf of all five? Somebody ain't telling us about their resources. We know what part of it is, of course. We know that the PG&E doesn't tell us about 389 megawatts on their first set of exhibits and 474 megawatts on their second set of exhibits. That's part of it. We could break down the rest of them, as I've indicated, in the other four scenarios, and we would begin to see why the sum of the parts is greater than the whole.

Now, when you think in terms of these last two scenarios, particularly -- in a way, you know, it looks like black magic -- you put on any numbers you want and you come up with whatever answers you want. Just think of it in concept. If you reduce, by a constant rate of growth, as, for example, by conservation, the load of the company, and maintain constant the surpluses -- or I should say, resources that are available to it -- there will be a constantly widening or increasing gap. Those are the surpluses. The load is here (indicating), and instead of moving up sharply like this, it flattens out, and the resources are up here and your curve is going to show the constantly widening gap as the years go on. That's the reason for these very staggering surpluses, 4,215 megawatts. You know what that is? That's the surplus of the Pacific Power and Light Company alone. That is the surplus alone, and that's really what I wanted to tell you about on the scenarios and needs. I count about ten minutes left, Carl?

MR. SABOL: Are you through the scenarios?

MR. SHENKER: Yes.

MR. SABOL: I assume that the information you've just given us in these five scenarios, in your judgment, is used to object and take exception to the applicants' first findings through, say, No. 34. I notice in your comments you didn't take exception in there to them. Why was that?

MR. SHENKER: Because I changed my game plan, Joe. I was going to talk about them in detail here, today, but since they didn't talk about their findings yesterday, I decided not to do that.

MR. SABOL: I'd like to refer you to the applicants' finding, No. 25.

MR. SHENKER: Yes, sir.

MR. SABOL: This question is directed to you simply for illustrative purposes for the board members. Perhaps

Perhaps the other six understand this; I don't. The applicants' finding No. 25 purports to indicate what the various surpluses and deficits will be for the combined applicants, 1975-1986, and what they show as the largest deficit, being 1764 megawatts for the year '82-'83. Now, what I want to ask you is, first, do you square that by subtracting from their load the amounts of megawatts that they sell to other customers, for resale to their customers?

MR. SHENKER: In some of these scenarios, I do.

MR. SABOL: And by the use of DNR Exhibits, as opposed to their exhibits. So then, would you tell me and this Board, please, how that 1764 megawatt deficit in '82-'83 in their finding No. 25 compares with your 1438 plus PP&L's 1732?

MR. SHENKER: No, 1764 is the year '82-'85, so you're right.

MR. SABOL: 1738 plus PP&L.

MR. SHENKER: Although -- what you just read from finding No. 25 is on Applicants' Exhibit 3-C. That is where it comes from. When you read it out, it doesn't show you a percentage rate of growth. It just says, this is what the applicants' growth is going to be, and these are the loads we're going to have. Now, we know how they computed it, because we listened to them testify in the evidence. Hofacker says it's going to be around 5%. Dave Knight says it's going to be bigger than that, it's going to be around 6%, and Bredemeier says it's going to be around 7%. The individual representatives of the five applicants testified as to what they thought the growth would be. They told us how they did their computation, and they put on the exhibit what resources they had.

MR. SABOL: Let me interject just one more question along the same line, if I may. In your exceptions and objections to their findings, you did not object or take exception to their finding No. 13, which sets forth their rate at 5.6%. Are you now doing that?

MR. SHENKER: I'd better look at that finding first, to make sure that I'm recalling it correctly.

MR. SABOL: You didn't except anything or object to anything until you got down to 34. That was the first one you objected to, so I'm assuming the others, at least at the time of preparation of your objections, you agreed with?

MR. SHENKER: No. No. 13 is absolutely correct. It says what this says. If you look at this piece of paper, if you look at Montana Power Company's forecast for the years '75 to '86, it does amount to 5.6% per year compounded energy growth. That's mathematical. They are absolutely correct. That's what their piece of paper says. There's no doubt that their figures, their computations, show that. Now, you ask me how do I square this, right? There is also a growth rate at which we can look back 10 years from now and say it was plugged into the Exhibit 3-C, which came up with 1764 megawatts. (a), they're wrong. That's not the growth rate that's going to occur, because their own expert says so, because our expert says so, and because they have been using the patterns of the past to predict the field of the future. (b), (a) speaks only to load, okay? (b), still speaking for load -- all of this growth rate assumes that in the year '75-'76, they're going to be at 6,172 megawatts. That's the base on which they start. We're only a month and a half away from the end of this year, and Mr. Gregg isn't a betting man, but he kind of had a hunch when he testified that they were high on where they were going to end up at the end of this year; therefore, it's going to be a lower base on which to increase and therefore, the load by 1982 is going to be less than they say it is.

MR. SABOL: From the evidence you've heard, is that going to be a substantial difference?

MR. SHENKER: Oh, sure. When you start compounding 3% over five years, you've got a substantial difference. (c), resources, and this is the one that I think is really the base of the whole thing. First of all -- what did Leo call him? -- candid George told us they can't do their projecting more than five years. That's the reason they don't bring resources on in their projections more distantly than five years away, with any degree of confidence, so if we're at the year 1982-1983, 7 years -- the end of that period of 7 years -- we could build practically anything we wanted to, and Pacific Power and Light Company has on the planning boards now 47 different plans of what they could build. The Montana Power Company, if it wanted to, could build a 150-megawatt combustion turbine. They could build a 350-megawatt coal-fired generating station. They don't need it, because the same exhibit that you just asked me about, 3-C, which is the basis for the finding No. 25, incorporates the Montana Power Company projection, and it shows for the year 1982-1983 that they're going to have a deficit of 45 megawatts surplus over firm load with critical water, so for 45 megawatts in the year 1982-1983, the Montana Power Company knows how to meet that 7 years from now. They could do that if they wanted to with putting resources on line in this period of three years for a combustion turbine, or 62 months for a 350-megawatt coal-fired generating station. That is how I square that.

MR. SABOL: That's assuming 3 and 4?

MR. SHENKER: No, no 3 and 4, because none of these exhibits assume 3 and 4, and their exhibits also exclude 3 and 4. The Montana Power Company and the applicants as a whole, five of them, have a set of exhibits that included 3 and 4, but none of the other companies do that regularly, so I've excluded them in all my computations.

MR. SHENKER, continuing:

I want to turn, really, to the question just asked me, if I could, to wind up on what the alternatives are. I think one of the most impressive alternatives is conservation. 5% a year is very impressive, and it can be done, Let's leave that one aside for right now. Everybody who looks at energy planning says that the closer you put the plant to the load center, the better it is. Now, that's an alternative, surely, the closer to the load center, the better it is. If we're planning for all five of these applicants, only one of whom I see is represented by counsel, at any time during final argument, or by anybody else --

MR. PETERSON: We represent all five applicants.

MR. SHENKER, continuing:

I just missed Hugh Smith and Merrill Emerick and -- they were around last time. All five applicants are participants, all five applicants are the ones for whom we plan, then let's go to where the load centers are. If we're planning for the Montana Power Company -- and that's the way Mr. Bellingham's argument sounded yesterday morning, let's go to where the load centers are. That is an alternative.

Second, the unit train -- I really don't know why Mr. Hofacker and Mr. Pettibone went to all the trouble to discredit unit trains service. They knew at the end of the line that they were going to be embarrassed, because the prime contractor for the Colstrip units is the Bechtel Power Corporation, and the Bechtel Power Corporation is on record for having completed studies quite recently, as well. They've been doing it for the last decade, and their most recent studies say the same thing, the most efficient way to transport coal into the consumer's house for energy consumption is by pipeline, slurry pipeline, the second most efficient is by unit train, the least efficient, by transmission line from a mine-mouth. That's elemental stuff. The Northern Great Plains Resources Program says the same thing. Now, depending on which dollars you crank in, you come up with a Pettibone study or a Hofacker study, but in terms of energy efficiency, there is nobody who says -- there's nobody who says that it's more energy-efficient to transport by mine-mouth generation, and transmission line, and I think energy efficiency is one of the real concerns to which we have to address ourselves and which has been the real burden of much of my remarks.

Pipeline -- that's another alternative. Now, you have a problem in Montana currently with the pipeline -- no eminent domain power. Legislatures have been known to create eminent domain powers when impressive minds are brought to bear upon the wisdom of doing so. By the way, what's the reason they don't have eminent domain power for the pipeline? It uses too much water, right? Mine-mouth generation uses ten times as much water as the pipeline, so if we're really worried about mine-mouth generation, we may have to look at the pipeline in comparison and it's obviously a more attractive alternative.

Hydroelectricity, I mentioned. Gasification -- if one of the reasons for concern for the need for energy to be transferred into electricity is that we're having a dwindling supply of natural gas, let's pour the coal into natural gas. That's in the national interest, and we know that that kind of a plant uses one-fourth the amount of water -- one-fourth the amount of water, as a coal-fired mine-mouth generating station, and we know that it would employ ten times the number of workers. That's jobs. MHD is one of the exotic things that Mr. Bellingham was talking about. Well, that exotic thing happened to have a breakthrough. It was testified to in these proceedings, that shows that they are at least a year ahead of schedule, and by 1982, now, you have the potential of commercial operation of magneto-hydrodynamics. That's what you can do. That's what you can do if you're willing to put your priorities where the energy crunch is.

Nuclear? Well, we know that's cheaper, and we also know that it's cheaper to operate. PGE says so, Puget Sound Power and Light Company says so, so for the five applicants as a whole -- maybe not for Montana Power -- no, building a nuclear station here, when we have 400 megawatts of unused power at Skagit operated by the Puget Sound Power and Light Company coming on-stream in 1982 and 1984. That's another alternative for the Montana Power Company, as well as for these applicants. You remember that the applicants, PGE and Puget Sound, are the respective sponsors each, of 2500 megawatts of nuclear capacity. The testimony is that the first one to win approval is going to cancel the other units. One of them is going on in Washington, northwestern Washington; the other one is going on in northern Oregon. The first one to get approval, though, is going to cancel. That's an alternative that they're both pursuing right now.

Purchase? Yes, that seems to be an alternative which Bechtel had recommended to the Montana Power Company in 1964, and which the Montana Power Company still uses, even while they have surpluses in self-generation. Combustion turbines? Yes, Portland General Electric Company, a year and a half ago, that is to say, a year and a half after the application for this proceeding was filed, switched to combined cycles. They got 150 megawatts of additional energy from their combustion turbines just by changing their technology into a combined cycle operation, and therefore use it for base load average energy delivery.

A smaller unit, perhaps? Is that an alternative to Colstrip 3 and 4? Kanu Shah thinks so, and he was the man hired by the Department to make the independent analysis based upon the applicants' own figures. That should be remembered. He did not go in and say, "Give me all the raw data. I'll put together my own forecast." He could have. He said, "Give me your forecast, and I will determine whether it meets the basic modeling tests that have to be performed," which is what he did.

MR. DAVIS: We're about out of time.

MR. SHENKER: Let me conclude.

It is the position of the Department of Natural Resources and Conservation that you should deny the certification requested of you. It is further the position of the Department that you should find, as we have proposed in our conclusions of law, that there is a need for some energy facilities to be made available to some of the applicants, and that there is adequate time for the applicants, or such of them who wish, to propose and implement those alternative forms of facilities. Further, that when such an application is filed, the technology described in the basis for the evidence brought into the 28,000 pages that I have mentioned should be included in order to expedite the evaluation of such next application.

There are two alternatives, granting or denying. I don't think this is an exercise in the art of the possible. I disagree with my colleagues, Mr. Meloy and Mr. Graybill, as you know I do, on whether you have that kind of decision that none of us should envy. Most of the things worth doing in the world have been declared impossible before they were done. Sitting on this Board and making your decision might be declared an impossible task before it is done. If you grant the application you are not insuring that the housewife will be able to turn on her light switch in 1984. You are insuring that the Montana concept of utility siting will not begin with you. You can defer that task for another day.

If you deny the application, I don't think you should have the feelings of guilt that brown-outs and black-outs will be followed by joblessness and a lack of growth and stagnation. It was not you who filed the application here in the manner in which it was filed, when it was filed, and how it was filed. It was not you who supported the application as you chose to file it. It was not you who bore a burden of proof. It was not you who created the Utility Siting Act by legislative will of the people of the state of Montana. You represent the collective judgment of the body politic by a specific design.

You can make a finding that the need for some energy, the 100-megawatt facility that the Montana Power Company says it intends to building anyway, maybe even -- although I think this is probably the top of the possible range -- maybe even that 350-megawatt facility that Mr. Graybill said yesterday we'd all be willing to accept now, that the Montana Power Company said in 1972, was going to be its alternative if Colstrip 3 and 4 did not go through, and they repeated the statement in 1973 and 1974 -- maybe even that finding could be made by you as the declaration of your consent. It can't be your approval of an application, because that hasn't been filed, but it can be the expression of your will and intent. In short, I don't see a way to save the baby while throwing out the bathwater in this application by itself, but that doesn't mean the baby can't be saved. There is ample time, ample ingenuity, if we put our heads to it, to make sure that energy planning is done as the Montana legislature had commanded in the Utility Siting Act, and nothing less. Nothing less is your privilege rather than the decision that none of us envies.

As my pre-luncheon good-bye, I really appreciate your attention, your patience and courtesy, and not only today, but in a couple of hard years in looking over the proceedings and what had to be done, and I would be remiss on behalf of the client, whose recommendation gave birth to all of this, if I didn't express our appreciation formally and personally. The way that Carl did preside over the hearings, it was a yeoman task. It would have to be to work with guys like us over the duration of our proceeding, but for his courtesies, as well as for his patience, we are all grateful.

To colleagues on both sides of the aisle, I also express my appreciation, and now, on behalf of the opposition to this application, we leave it in your hands where it rightfully belongs. Thank you.

DR. CLARK: I'm really puzzled by all parties in this agreed that there is a need for regional planning and yet not a soul mentioned MDU, and what you're doing, you're disenfranchising one area of the state. Now, if the applicants were taking the attitude that in their planning, it was all looking westward, which apparently it was, perhaps that's an excuse, but I see no excuse for the Department of Natural Resources not bringing in the other quarter of the state. I would think that in your argument this morning, you were talking about the fact that this regional planning had to be done, but yet, in all of the figures that you have used, you have not said a word about MDU. You are representing a department of state government that purports to represent all of the people in this state. You are charged with the job of evaluating the overall situation, and I don't think you have done it, and I'm puzzled by this omission. Now, I tried to get a little bit of that yesterday, without any success, but I think this is a major deficiency in both the presentation by the applicants and the presentation by the opponents and all parties thereof. I don't know whether you can give me an answer on it, but I think this is a very serious deficiency, because you're disenfranchising a quarter of the area of the state.

MR. SHENKER: Yes, I can give you an answer. It wasn't a question, but let me respond, Dr. Clark.

MR. SHENKER, continuing:

I thought I was saying what you were saying earlier today in commenting on Mr. Bellingham's point yesterday that MDU's plants are not in this proceeding. They should be. I don't think you can do regional energy planning for these five applicants. I don't think you can do regional energy planning for the Montana Power Company alone. I don't think you can do regional energy planning for the REAs alone. I think you have to do regional energy planning for regional energy planning, which includes MDU and the REAs and the BPA and the Bureau of Reclamation and Washington Water Power and Pacific Power and Light Company and the Montana Power Company in Montana, and it doesn't stop there. I think you've got to proceed with the kind of commission that we talked about in our proposed findings of fact, that is headed by Mike Katz, ex of the Bonneville Power Administration looking at all of the states and all of the interconnections that are involved.

We make that finding as a proposal before you. We made that as a position statement in our opening statement. That's in the charter, as it were, that the legislature gave to the Department of Natural Resources, so on the one hand, I couldn't agree with you more, on the necessity for that kind of energy planning. The statute says there's got to be a regional energy planning showing made. It's described in the Department's environmental impact statement, but the applicants chose not to ground their application within the overall regional energy needs.

Now, where I disagree with you -- it is not the purpose of the Utility Siting Act, as I understand it, its legislative history, its design, its language, for the Department of Natural Resources to substitute itself for an applicant. As we said, in our statements filed with you, in our opening statement, if the applicants wanted to file this application and say, "We will not give a single piece of evidence to support it," they had every right to do that, at which point, the Department had no obligation to evaluate the application. Now, we may disagree about that, because you'd say the application, by statute, is required to be evaluated in an environmental impact statement. I disagree. What they proposed has to be evaluated, and if they filed the application that was filed in this case and proposed nothing to support it -- no transmission line route, no scrubber system for environmental impact, no technology improvement, a retrogression in technology and energy efficiency, down to 30% energy -- Corette was at 37% -- the Department has no obligation to evaluate that.

What the statute requires of the Department is the evaluation of the proposal made. It did that in the environmental impact statement, because the companies finally did submit something other than their application. They submitted an environmental analysis from Westinghouse that was supposed to end all questions. The Department found out they had a lot of questions after the environmental analysis came in, and the task was completed, as far as the statute was concerned on the Department's evaluation, when they filed their environmental impact statement in preliminary form and then take further comments from people who think they ought to change their analysis one way or another. They filed their final environmental impact statement, made their recommendations, and that perfected their statutory duty unless somebody wanted to have a hearing. They wanted to have a hearing, at which point the Department had absolutely no obligation. The Department could have sat mute throughout the entire hearing if it had wanted to, or the Department could have chosen to offer that evidence which supported the positions that had been taken in response to this evaluation.

Now, if the applicants had come together and said, "Listen, this is the way we want to do regional energy planning. We want to sit down with the Governors of Idaho, Montana, Wyoming, Colorado, North Dakota, South Dakota, Nebraska, and then we're going to bring in the folks from the Pacific Coast. We'll bring the Governors of California, Oregon, and Washington, sit down with all those folks. We want to have regional energy planning done from the grass-roots. The Governors can direct people at all levels of government to plan." We'd have something to respond to then, and I'd like to have had a discussion on that basis. That's the reason our lead witness was Bill Christiansen, who is the man charged with the lead responsibility for energy planning, and in Bill's testimony, he said, not only as the Lieutenant Governor and as the energy czar, so to speak, in here, but in charge of the Montana Energy Advisory Council, he said, "I think we've got to have regional energy planning. We've got to have it." You don't have it, and I think this Board should take a leadership position in saying you need it. This application doesn't foster it. It keeps us back in the obsolescence of technology, which is irrespective of regional energy planning, and that's why we proposed that the Board say just that, in both the findings and the conclusions of law which we have submitted.

DR. CLARK: I'm not satisfied at all with the answer. A second thing I had in mind --

MR. SHENKER: Would you like to tell me about your non-satisfaction?

DR. CLARK: Everything, including Mrs. O'Leary's cow, has been dragged into here, into this hearing, and I don't know why this wasn't dragged in, too. Now, let's let it go at that. Secondly -- and it's tied to this same thing -- I've asked a number of people on the Board. I have specifically not asked this of the attorneys for either or any of the parties. I felt that would be improper, but it really is tied to this regional planning thing again. Now, I thought that Mr. Bellingham yesterday morning was going to do what I was hoping be done, when he put up the map of all of the generation sites in the state, not only their own, but the Bureau of Reclamation, Bonneville, and all the rest of them. Some way or other, in order to get a handle on this overall picture, you really need a map that says, "Here's what is generated, and here's what comes in and here's what goes out, and here's who owns how much of each," and I'm really amazed that that hasn't come out of this.

MR. SHENKER: May I respond to that?

DR. CLARK: Yes.

MR. SHENKER, continuing:

You know why Mrs. O'Leary's cow came in and the rest of the stuff didn't come in. It's called the discovery process. We can't take the depositions of the folks at Utah Power and Light Company with the same kind of facility as we can the folks in the Washington Water Power Company. We almost had trouble going down to Bechtel, taking their depositions. I'd like to know what the interconnections are with Utah Power and Light. I don't think you can do the regional energy planning without finding out. There are just internal procedural problems. Utah Power and Light is not a party to this proceeding, neither is Idaho Power, neither is the Bonneville Power Administration, as a matter of fact. Oh, they're friendlier than the public parties. You can ask them for their data. I don't know what the needs are of the Idaho Power Company. I'd love to know -- and they don't have to tell me. Now, we might be able to persuade them through legal force of process. Mr. Davis could issue a subpoena, which would then be entered in the Montana district court, which would then be registered in the Idaho equivalent court, and a processor could go out to the deponent, the Idaho Power Company. They would decline to respond and litigate the question on jurisdictional grounds. That's what the Bechtel folks were planning to do before Jack Peterson interceded and said, "It's sure going to protract this hearing a long time," so that we have another way of getting the information.

I think we need that. I think you need a compact of Idaho and Montana that says, "Let's stop playing games with individual private sectors. Let's put all the information out on the table. Let's put all the planning together right now." I can't get that information. Neither can you, right now. You can ask hard. Bill Christiansen can't get all the information, either. He wants to get it from the REAs and can't get it. That's what he said in his testimony. He tried as hard as he could and put as much together as he could. Bill Brewer, the energy czar in Washington, said the same thing in his testimony. He said, "They won't tell me. Power companies for whom I'm supposed to be the expert, now on an academic basis, previously as the Governor's Director of the task force, won't tell me, either. I can't get that information out of them." I think that's an absurd situation, and I think it dooms regional energy planning if it's permitted to continue. That really was my point, that's why you have to exclude sales for resale, looking at growth. How do we know what the Idaho Power Company's growth is?

You are 100% right, Dr. Clark, 150% right, in my view. We should have not only a map to show who owns what and how much, but where they are interconnected to. That's what we need to know.

Why should we be in a situation that the Pacific Power and Light Company has 47 different plans from which they can choose to determine where their resources are going to be, and they're tilting the states of Washington, Oregon, Idaho, Montana, and Wyoming? It's the shuffling of the hidden ball. I put it to you that we cannot do regional energy planning on the basis on which the applicants made their submission here; that if we're going to do regional energy planning, let's do it, and let's start now. In the meantime, I suspect, we are going to have to provide 100 megawatts for the Montana Power Company in 1983. I think they can get it from the friends, the other applicants in the Pacific Northwest, but it sure doesn't make sense to me, in the first major application under this Major Facility Siting Act now-called, to allow an application for the majorest complex that ever came around here without having the context of the regional energy planning. That was my whole point of the necessity of having to look south and east, as well as west. I think it's necessary.

DR. CLARK: On that, I will agree.

MR. DAVIS: We will recess until two o'clock.

(HEARING RECESSED AT 12:45 P.M.)

Following the luncheon recess, the hearing reconvened at 2:00 P.M. on May 20, 1976.

MR. DAVIS: Very well, Mr. Peterson; if you would like to continue.

REBUTTAL

BY APPLICANTS

By Mr. John Peterson
Attorney for Applicants

MR. PETERSON: Mr. Davis, members of the Board: First of all I would like to allude to a couple of questions that were asked yesterday by the Board members, of which we have attempted to supply some answers. One question was relative to the efficiency of the removal of oxide nitrogen on the unit 1 tests. There are no efficiencies that can be calculated, for a very good reason: Nitrogen oxide is a creation of the combustion in the boiler; it is not a property of the coal. What we do in the total system on boiler combustion plus removal in the scrubber is measure the emission according to EPA. That's all EPA is interested in.

When we say that we have a 63 percent removal, that means there's 63 percent less than the standard which the EPA allows. We have, in the record, evidence that the scrubbers account for approximately 15 to 20 percent of the NO_x removal and any figure above that, between the 63 percent and that figure, is what is combusted in the boilers below the standards.

Again, we don't have any data on the inlet to the scrubber because the tests are run in accordance with EPA regulations and they do not require it. It is not a property of the coal and it is created in the boiler itself.

There was a question asked by Mr. Drum and Mrs. Herak relative to annual leasing payments versus lump sum payments to landowners in condemnation proceedings. First of all, the utilities in this state follow the state statute; and there would have to be, in our opinion, statutory changes in order to affect that type of a payment structure, particularly since the utilities, not only to the Public Service Commission, but to their stockholders, are duty bound to follow the law. More important though, the mortgages on the bonds which the utilities have in order to get financing, requires that they can only mortgage owned property. The bonding companies or the lending agencies do not permit lending on property that is not owned. It affects, therefore, the financing of the utility.

Second, we anticipate that it would cost more; that it would be a larger expenditure for the ratepayer, who ultimately must bear the cost. Also, it could take away tax advantage, which the landowner himself has when he receives a lump sum payment, because if he reinvests that money in a certain period of time, it's non-taxable. Those are the problems that you have when you lease property for the purpose of a transmission line.

I would say, however, that under proper statutory structure, Montana Power Company would not oppose land leasing for transmission purposes if it could be put together. It may have the affect of deleting or reducing a number of the condemnation proceedings, and in that respect, it could be an anti-lawyer relief act, for which we're always accustomed to having. We're always for that.

Now, there was a question relative to the unit 1, the nozzle; and this, I think, plays in also with some of the argument of counsel about the performance of unit 1; the wait-and-see argument, whether it's a unique scrubber system, whether it will work. We've testified repeatedly in the hearings that we are constantly looking for ways to improve any system in a generating facility. We've told the Board of Health and we've told the Board of Natural Resources that any time we make an improvement on these scrubber units, we expect, and I think that the Board of Health in their findings explicitly imply that these improvements were to be adapted, not only to unit 1, but to units 2, 3 and 4, if they come on line.

The nozzle problem is one in which we are doing a study on a trial basis to install nozzles to reduce the splashing where the slurry comes into the scrubber near the wet-dry interface. The only purpose of it is to reduce the maintenance problem that we presently have. We told the Board, that is, in the record, that we anticipated solid buildups at the wet-dry interface of these scrubbers. We also told the Board it was a maintenance problem that can be handled and it is being handled. It has nothing to do with the efficiencies of the scrubber; it did not affect the reliability; and, in fact, it's nothing more than a maintenance problem we have such as in other parts of the plant.

The system, I suppose, is unique, and I've always conceded that it was, because any system, any air pollution control systems, are unique. They're unique because it's admitted by all of the evidence in this case that when you design and construct air pollution control systems, they must be site specific. They must consider the fuel to be used. There are different fuels in different generation points; you have to design for those fuel characteristics. That's why we have a whole wealth of exhibits here as to the composition of the Rosebud coal and the McKay coal, to which I'll allude later.

When we presented our argument to the Board of Health, relative to the scrubber system, and I took a great deal of pains to go through the entire system as to how it worked and operated, how it was designed, the parameters it has, the Board of Health made a finding after that argument and after our proposed findings which we think settles the question; and that is finding number 12. After the Board of Health describes the system itself, the air pollution control system, beginning at finding 5, it concludes in number 12, at page 9 of the Board of Health findings, that the emission control system for Colstrip units 3 and 4 is the best suited for the Colstrip plants because it makes use of the alkalinity nature of the fly ash found in the Rosebud coal and thus reduces dependence on additional lime injection. Now, inherent in that finding is the fact that we have a site specific condition. We have, by reason of the use of the fly ash in the coal, we reduce our dependency upon lime or limestone additives. This in turn makes it more economical to operate. It also in turn reduces the amount of sludge that comes out of the scrubbers, which we must deposit in waste disposal ponds. It's all tied in one to the other.

Now, a lot of coals, including McKay, do not have this unique characteristic of the fly ash. When one of the inventors or the designers of this system testified at this hearing of the Board of Health, a man from Bechtel, Mr. Abrams, he specifically stated on the record that we were very lucky that we found this type of a characteristic in the coal to use in these scrubber units. So that's why it's unique for Colstrip.

Now, when Colstrip was tested, unit 1 was tested, and I don't want all the dependence on this scrubber unit to rely upon that four-day testing period, because this record has numerous volumes, one of them is Exhibit 74, which is Phase Two Pilot Plant Report, which details the efforts, the results that we went through in running the pilot plant at the Corette Station to test the chemistry of the system, to remove sulfur dioxide and particulate matter. The reliance upon, therefore, February 10th, 11th, 12th and 13th, we do not rely on it in testing the chemistry; what we said it did was prove the chemistry and prove our predictions. The testing was done by an independent testing agency, the Yapuncich, Centerson and Brown Laboratories of Billings, recommended to us by the Department of Health. They state that the methods they employ in testing unit 1, quote, "EPA methods 1 through 7 were used for the determination of stack gas, particulate matter, sulfur dioxide and nitrogen dioxides as given in the Federal register."

There are no theoretical computations relative to this testing method. We have the hard data right in that report; it's in the evidence, Exhibit 278. There was a comment made by counsel today that we did not monitor unit 1 inlet to the scrubber. That's true; there is no legal reason that we have to. He said that the Board of Health made that a condition. The conditions of the Board of Health, in our opinion, specifically relate to the operation of

Colstrip units 1 and 2. Those are the operating conditions they set for those units; those are the only things they had before them. What we did in making the computation relative to the efficiency, and I might state as far as DNR Exhibit, I think it's 41, is concerned, Doctor Grimm specifically disagreed with the numbers that were on the exhibit; they were numbers that were put on the exhibit by Mr. Shenker in cross-examination. They are his numbers, they are not our numbers and we disagree with them. We still maintain that we arrived at an efficiency of 75 percent.

Now, the question, I guess, that was first addressed by Mr. Shenker is whether or not we've got certification from the Board of Health. Well, after you read the document, I don't know what else you'd call it. If it isn't certification, what is it? They specifically found, in these findings, that we've got a flue gas desulfurization system which is most suited for Colstrip. They go through and tell us what the emissions are going to be, predicted; they tell us what the ground level concentrations are going to be; and I might state at this point that in arriving at that finding for ground level concentrations, contrary to what Mr. Shenker said this morning, they specifically adopted the testimony of Doctor Faith, because he's the only one that gave testimony on those ground level concentrations for the applicants.

If the opponents, as they have argued relative to this certification, state that they did not specifically include matters of sulfuric acid mist, of which there will be none; photochemical oxidants or ozone, of which there will be none; such failure conclusively binds the Board against making such findings in your findings of fact. We say that's not true under the Utility Siting

Act.

First, the Board of Health most assuredly made a finding on each pollutant which the standards apply to units 3 and 4. Finding 1 specifically laid them out. Finding 14 specifically set forth each of the emissions that we predict for Colstrip, based upon the applicants' testimony and evidence. Finding 24 specifically sets forth the ground level concentrations taken from the applicants' testimony; and that's important to us, because if you look at the status of the record, those are the pollutants for which the calculations were made, because the evidence of the applicants is that there could be no necessity to make calculations for sulfuric acid mist or ozone because there isn't going to be any, and that's the status of our record.

Second, under the Utility Siting Act, as I mentioned yesterday, this Board may not grant a certificate unless it concludes in its findings and determines each of the criteria listed in section 16, which is 816 of the Act; 816, subsection 4, under air quality impacts, specifically states that you must find and determine the standards in effect and project it for emissions. You must find design capability to meet those standards. You must find the emissions and controls. You must find the stack design, the particulates, sulfur oxide, oxides of nitrogen, trace elements, radioactive materials and other toxic substances. We have addressed each one of those matters in the findings which we proposed to the Board, and we believe that the evidence sustains those findings.

There is certification by the Board of Health. We'd be willing to construct these units on the basis of that certification.

If it was not artfully drawn by the attorney from the Board of Health in the specific language of the statute, that is a problem that the administrative agency has. We were not responsible for the drafting of these findings, but to us the intent is clear and so is the language. When they said that they certify under their conclusions of law, they grant additional certification for 3 and 4, subject to suspension, and then delineate certain operating parameters.

Now, under the Utility Siting Act, it's the position of the applicants that because of another section in that Act, 817, which states that notwithstanding any other provision of law, no state or regional agency, which includes the Board of Health and the Board of Natural Resources, or municipality or local government, may require any approval, consent, permit, certificate or other condition for the construction, operation or maintenance of the utility facility authorized by certificate issued pursuant to the provisions of this Act, except that the state air and water quality agency or agencies shall retain authority which they have or may be granted to determine compliance of the proposed facility with state and federal standards and implementation plants. It is our position that we don't need a construction permit under the Clean Air Act and the State Board of Health. We've already got the permit under the Utility Siting Act.

Certainly we have to operate plants in authority with the Clean Air Act; and the issue as to whether or not we need an operating permit under that Clean Air Act with the Board of Health or with the Department of Health will be left to another day. It hasn't got anything to do with the construction of 3 and 4.

With regard to the techologies of the scrubbers and the criteria set forth in the findings of fact which were proposed by the opponents, the Department of Natural Resources, dealing with the National Academy of Sciences and the criteria of development of pollution control systems: At the outset, let me state first of all, that these findings and this evidence -- first, the findings were prepared by the opponents, the Department of Natural Resources; if you go through the draft EIS of the Department of Natural Resources and it's final EIS, after it has made its lawfully charged intensive study, you won't find one word in that draft EIS or in that final, about the criteria of the National Academy of Sciences or about developmental state plans for construction of air pollution equipment.

This didn't come on the scene until after that report was filed and before the hearing began. The Board did include that criteria, the Board of Health, in the findings, both of them; but we feel that the findings with regard to that matter are irrelevent to the issues which the Board of Health had to decide, because, by their own testimony or by their own findings, they had just before that stated that we had the best system for Colstrip. I don't think it's a critical matter with regard to the findings of the Board of Natural Resources.

But be that as it may, there are two regulations adopted by -- one regulation adopted both by EPA and the Board of Health regarding the matter of best available control technology. It was not alluded to in the argument by the opponents today, and they have carefully skirted this issue every since they brought up the 90 percent criteria.

Best available control technology is defined by regulation, quote, as "any control devise or technique which is capable of limiting emissions to the levels proposed or promulgated pursuant to new source performance standards." (Unquote.) It's very simple language. If your air pollution control system is constructed and operates to keep your levels of emissions within the new source performance standards, you have the best available control technology. That is an objective test.

As we have clearly shown, Colstrip units will meet that criteria. And we further feel that the term "minimum adverse environmental impact," considering the state of available technology and the nature and economics of the various alternatives, that phrase relates to the most economic technology that will bring the plants in compliance with the standards.

As I stated earlier in these arguments and we've repeated it over and over again, and at the risk of repetition I'll say it again: There is no system in the United States today which uses the special features of Rosebud coal operating closed loop to preserve water quality and without a bypass around those scrubber units in order to preserve the air quality of Montana; and there isn't a scrubber with those specific design features, designed as it was for Colstrip, and the evidence is in the record on this point, that can achieve 90 percent removal and yet be reliable. And that was the testimony of Mr. Abrams.

A witness for the DNR said, or implied, that 90 percent was possible for Colstrip; but on cross-examination, that witness concluded, quote, "His study did not relate to Colstrip 3 and 4 at all." (Unquote.)

DR. CLARK: Was that Devitt?

MR. PETERSON: Devitt, yes.

MR. PETERSON (continuing): And he further admitted that the technology for scrubber units must be site specific; the thing we've been telling everybody for a long time. That is, it must be tailored to the coal, the meteorology of the area, the evaporation potential of the ponds, the ash disposal sites, water availability, among others.

Now Mr. Wake, who is the head of the air quality bureau for the Department of Health, stated that what we mean by the state of the art and the implementation plant is best available control technology, which we have just defined. He says specifically that the use of scrubbers is not only endorsed by the EPA, but by the Montana Department of Health, too. And with regard to 3 and 4, he said that I can give you what I feel would be my opinion on the matter when asked about best available control technology, and that would be a removal efficiency somewhere not less than 75 percent control of SO_2.

This criteria, therefore, regarding the 90 percent, the bench scale or the scaled up models, in our opinion, not only were followed but they were unnecessary with regard to scale, because we have a commercial unit at unit 1 and is operating and operating well. And if it isn't a commercial unit, then the definition that they gave by their own criteria is wrong. They wanted us to consider alternatives, electrostatic precipitators followed by an absorbant. Where in the record is it that this is going to work for Colstrip? They had no engineer design such a system or speak to it. What's it going to cost? Is it the most economic, or should we go out and suck up the ratepayers for more money in order to preserve the environment when we don't need to do that.

Mr. Graybill made an argument yesterday relative to seepage of the ash in the disposal ponds. I think the way to lay the whole thing to rest is to refer you back to testimony that was given in Volume 43 of the transcript to the Board of Health. It's the testimony of Dennis McMillan, who is an engineer of the hydrology division of Bechtel. First of all let me comment at the outset that when we're talking about the surge pond at Colstrip, as it relates to units 3 and 4, it really doesn't mean that much, because it's going to be there for 1 and 2, regardless of whether 3 and 4 are built.

You have to differentiate between the method of construction of the surge pond, which presents different characteristics and different problems, as that from the ash disposal pond; and McMillan detailed this in his testimony in Volume 43, beginning at page 6177. I was asking Mr. McMillan what type of testing or study do you undertake in developing such a reservior or ponding for power plants? Answer: "The first thing that is always done before a reservoir is constructed is a site reconnaisance is made, both by the person who is in charge of the entire project, which is my job, and also a specialist from two departments within our company; the first department being the geology department and the second being the soil engineer department.

"The geologist is out there to look at the rock outcrops, the foundation and the structural capabilities of the foundation to withstand the dam and the resulting water pressures. The soils engineer is out there to look at the availability of local materials from which to build the dam and to look at the type of foundation to try and make a brief conceptual analysis of the type of structure that would be employed at that point. Following the initial reconnaisance, there is an exploratory program undertaken. The exploratory program, again, follows two phases; one being a foundation exploration, consisting of primarily drill holes, which happen under the immediate direction of the geologist and the second being the testing of the soil properties and the collection of soil samples for the testing of soil properties. This is generally under the direction of the soils engineer. And from that, the soils are collected, they are sent to a laboratory, tests are made in the laboratory to determine various properties of the materials, such as the permeability, their straints -- their sheer straints -- the consolidation that takes place under various types of loading, so that the final design of both the foundation and the embankments can be undertaken.

"The same procedure is followed when we are building a dam for hydroelectric generation purposes or whether we are building as water supply for a power plant."

Question: "Have you had any connection with the Colstrip Project?" Answer: "Yes, I have. I have been involved as the project engineer in charge of development of the entire water supply facilities since August, 1972."

"With regard to the surge pond, what work did you undertake for that particular facet for the water supply system?" "The initial sutdies that we did, concerning the surge pond, was to survey the surrounding area and to try and determine the most logical place to build the surge pond. As I recall, we considered four different areas. Studies were made -- brief conceptual studies, not final design studies, but conceptual studies -- were made of the four areas and the decision was made to construct the surge pond in a location where it was constructed. At that time the area was mapped by the geologist, and by mapping I don't mean topographic mappings. Topographic mapping has been obtained through aerial survey, but by mapping I mean geologic mapping. The geologist climbed all over abutments, he walked through the future reservoir area trying to map all of the outcrops where coal might outcrop, where clinker or scoria might outcrop, to get a good idea of the existing conditions that were there at that particular reservoir site. While the mapping was being undertaken, an exploration program consisting of a series of drill holes and test trenches was underway.

"There were a number of drill holes drilled on the access to the dam and also on the abutment areas on each side, and also along the abutment area. There were holes drilled in the spillway area, so that we would know foundation conditions underneath the spillway. There were test trenches that were dug down in each abutment so that it would expose the rock to the view of the geologist so that we could try and predict, or anticipate, any problems that we would have so that we could control any anticipated seepage from the pond." This took about six months.

With regard to the construction of the surge ponds, at page 6183: Would you explain for the record how it was constructed, that is, the construction techniques? "The first thing that was done for construction of the dam was the clearing and grubbing of all brush, trees, small wooden structures; I believe there was even a rusted out car body underneath the access of the dam. These were all removed. The second major stage was the excavation of what we call the cutoff trench. This is a trench across, or along, the access of the dam to an -- in order a core of the dam to be constructed on bedrock. Upon the completion of the excavation of this core trench, the foundation was grouted; by grouting, I refer to the drilling of vertical holes in the foundation on 20-foot maximum centers, the applying of cement grout, under pressure, to these holes and fill any cracks or fissures, or joints is a better geological term, in the foundation of the dam to prevent seepage underneath the core of the dam. This grout curtain, we call it, actually extends underneath the dam and up each of the abutment surfaces.

"Following the grout curtain, the material for the bank itself is placed and the material consists primarily of three zones; the impervious core, being a fine-grained, in this case, clay material, which is primarily impervious; a granular drain zone that is constructed on the downstream side of the impervious core, that is designed to pick up small amounts of seepage which may migrate through the core; and then the bulk of the dam, which we call shell material, which is obtained from local native deposits." And then he goes on and tells you about slope protection and upstream facing and how this is done to blend in with the characteristics of the area.

One important thing that we have to remember relative to the construction of the surge pond is the filling of the reservoir to determine whether or not the geological findings and the construction is going to work. And here's what he said: "During the filling of the reservoir we experienced, on the south abutment, some seepage from the abutment. At the time that this seepage was observed and analyzed as to the reason for the seepage, we wanted to obtain steady state conditions in the reservoir, and by steady state conditions I mean when you intially fill any reservoir, there's a certain amount of saturation that has to take place of the soils or materials -- natural materials in the reservoir. And as the water surface comes up in the reservoir, obviously new quantities of this soil are always exposed and they have to be saturated. So as the water table continues to rise, there continues to be new soil subject to saturation; so in order to reach a steady state condition, we have to hold the water surface constant. We have attempted to hold a constant for about the last three weeks, or four weeks; I don't recall exactly the timetable on that, but approximately three weeks we have tried to hold the level constant at 3270 to 71 range." They did experience a leak, and the fact of the matter is that that steady state condition for this surge pond is still going on at Colstrip.

Now, they also have constructed observation wells around this surge pond, and they did this prior to filling the reservoir. This was to monitor any change in the groundwater. "These wells," he explained, "the water level in these observation wells, or piezometers as they are sometimes called, are monitored daily. The well downstream of the south abutment began to show an increase in water level." And then he goes on to tell you about the seepage that they first acknowledged and which they have cut off. That had to do with the construction of the surge pond.

There is a vitally different matter of designing and constructing the pond for ash disposal. "What are you presently doing," at page 6192, with regard to ash disposal ponds at Colstrip? "Two things are currently underway: The first thing is construction of the first stage of the dam. . . Now, by first stage, I mean the underground portion of the dam. This consists of the excavating, the cutoff trench across the access of the dam to bedrock, the grouting of the foundation and the installation of the core material back to the natural ground. That has been awarded and is currently underway. The second thing that is underway out there is additional explorations. The reason for the explorations is to assure ourselves, finally, once and for all, that our estimate of the seepage through the northwest rim and through the east rim, is accurate. The estimate of seepage that's contained in this Exhibit -- Northern Plains Exhibit #3," (which is 3-a) "was based on permeability information that we obtained through the first stage explorations that were done primarily in the area of the dam. There were not permeability tests conducted -- not extensive permeability tests conducted -- behind each of the abutments." And this, he explained, is underway.

The seepage estimate for the northwest rim is 8 gallons per minute; they estimate 3 gallons per minute. And they estimate 68 gallons per minute through the foundation of the dam for the ash disposal.

"What activity have you undertaken with regard to collecting the 68 gallons per minute, which you anticipate will seep from the dam area?"

"Because of the nature of the water in the pond," and that is the nature of the quality of the water in the ash pond as opposed to the Yellowstone water in the storage pond, "it was determined that a very minimal amount of water could be allowed to enter the natural drainage courses. Therefore, we have proposed and designed a collection system that is outlined in detail in the Northern Plains Exhibit #3. It consists of a series of collection wells that will be constructed downstream of the dam and also a drainage trench that will collect surface type water -- water within five feet of the surface. These wells will create a depressed area downstream of the dam. Water will flow from all directions into those wells for what they call the 'cone of depression' surrounding each of the wells and from there through a drain system to a sump, and from that sump, the water will be pumped back into the reservoir."

And would this prevent it's flow down into Armells Creek? Answer: "That is correct." With regard to the seepage from the north rim of 8 gallons per minute, what is your experience; is that considered to be minimal? "That is considered to be very minimal. However, because of the nature of the project, the purpose of the additional explorations is to further define the amount of seepage to be expected and to determine whether remedial measures will be required at each of those rims."

What remedial measures are there? They can be called "blanketing" or "lining". "Blanketing can be material such as clay, a natural material; it can be a bentonetic type material, which is also a clay, a very fine clay that tends to expand on the introduction of water. This can be placed and compacted in the areas where seepage is anticipated. Another possible method that can be used is grouting of the foundation. I it's expected that joints, fissures, cracks exist in the foundation, then cement grouts, under pressure, would be installed into these joints to plug them and not allow the water to flow through the joints. Finally, the seepage can be allowed to occur as has been done below the dam, and that seepage collected through a well system, or a trench system, or some other kind of collection system, and returned to the reservoir."

And then he concluded that this follows the ordinary construction practices and the design construction of ash disposal ponds; and that's what's happening at Colstrip with regard to those two ponds.

I would like to allude for a moment to the transmission line that's been mentioned by Mr. Graybill and also by Mr. Shenker this morning, that there is no route selected for Colstrip units 3 and 4 500-kV lines. I explained to you yesterday and took a sheet from applicants' Exhibit 98, which I understand you have not received and which we are now having reproduced and will send on to you, that the routing for Colstrip 3 and 4, centerline routing, has, in fact, been selected as shows on this Exhibit 98. Mr. Zobel testified as to this exhibit, explaining to you that they are mosaics of aerial photographs. There are 62 individual mosaics of the entire preferred corridor taken before any construction or location of the centerline at Colstrip to Broadview.

Using the mosaics and the individual photos which they have, they carefully examined the terrain and selected a final centerline. That required fixing coordinates of all angle points; and they also received permission from landowners in order to do the aerial photography.

I think if you look at the exhibit and the sheets that are on this exhibit, you can see this black dotted line and circles where they have flags, which is the location of every tower. It's ironic, really, that Mr. Graybill would say that he didn't know the route of the transmission line. We provided a copy of this exhibit to him sometime after they were in Portland taking depositions in the C. T. Main office, which is the independent engineering firm which developed this mosaic and selected the centerline.

After that was done, it's apparent to us that Northern Plains Resource Council made a study of this line and the centerline and through whose property it was going to pass. We have introduced into evidence applicant's Exhibit 235, which is a letter signed by staff members of the Northern Plains Resource Council, over their stationery at 421 Stapleton Building, Billings, Montana. It was prepared for the landowners along the centerline; and it states, basically, that for the past six months the Northern Plains Resource Council has been actively opposing the construction of Colstrip units 3 and 4, and the two associated 500-mile 500,000 volt transmission lines before the Montana Board of Health. While we lost that decision when the Board of Health granted the Montana Power a conditional permit, we still feel that we have an excellent opportunity to stop construction of these plants and transmission lines before the Board of Natural Resources.

You may not be aware of this, but the company documents show that the transmission lines will cross your land, if the state agrees to the utility's preferred route. During the next month we will be traveling the proposed transmission line route to talk with as many affected landowners as possible. And then they advise the individuals to write to the chairman of the board or testify in the hearing.

So it's ironic to us to say that counsel doesn't believe where that line is going, when they had their personnel in the field actively soliciting landowners to oppose the project; because, as they said, the line would cross your land. The route has been selected and the finding by the Board can be made in conjunction with this Exhibit 98 and Exhibit 92 relative to the preferred corridor and the routing of the centerline.

The question was raised as to whether or not land values, whether this transmission line would affect land values.

MR. BERTSCHE: On the map would you show us where it crosses the Flathead Indian Reservation?

(Pause.)

MR. BERTSCHE: Jack, never mind; I read in your testimony that that hasn't been cleared at the present time. Evidently you have an okay from them to cross through there and to cross through the forest --

MR. PETERSON: I'm glad you brought that up, because obviously it wasn't in the record as such. I think I should address that matter because it's one that's going to have to come up sometime, that doesn't really concern this Board. The Salish and Kootenai Tribe appeared in this hearing through counsel, Mr. Baenan, from Washington, D. C. They elected not to participate actively in the hearing. They represent the Tribe. The Tribe was awaiting negotiation or the certification by state agencies before they make any move relative to this transmission line going through tribal lands. It's a matter that we anticipate can be resolved with the tribe. It's going to be a matter of money; I don't think there's any question about it.

MR. BERTSCHE: You didn't point that out in your evidence; you just said that no negotiations had been reached.

MR. PETERSON: I think Mr. Wahlquist indicated that we wouldn't, when he was asked about the Indian tribe, he didn't know anything about it but he didn't anticipate that we wouldn't be able to go through there.

DR. CLARK: Is the same true, Jack, relative to the BLM state lands, other agency lands, that --

MR. PETERSON: That's a permit system; there is a lead agency, as I said yesterday, of BLM which will do the environmental impact on transmission line through National Forest Service lands. As I understand it, it is a permit system you'd have to be granted; and it's a question of how you mitigate the impacts through their lands. It's not like the certification before the Board of Health.

MRS. HERAK: Is the Bison Range considered federal land?

MR. PETERSON: No, this line in the picture shows here someplace, Mrs. Herak, it passes the -- it does not go through the Bison Range; cuts by that existing 230 kV line that's presently there, parallels it.

DR. CLARK: So in the final routing as indicated in the Westinghouse Report, how close is the present design of routing relative to what it was in the Westinghouse Report?

MR. PETERSON: This mosaic will show that it's within the two-mile corridor of the Westinghouse Report, preferred route.

DR. CLARK: I appreciate the fact that the Westinghouse Report was only looking at corridor; I understand that.

MR. PETERSON: Right.

DR. CLARK: Now, that corridor actually nicked the Moise Range?

MR. PETERSON: That's right. And it's shown on one of the 62's. I think you'd have fun going through them, Dr. Clark.

DR. CLARK: I'll paper my house with those.

MR. PETERSON: Okay. We'll send you an extra copy then.

MR. BERTSCHE: Don't send me all those maps.

MR. PETERSON: Alright.

MR. PETERSON (continuing): With regard to the land values, principally it was discussed by Mr. Brunner, who has been in the real estate business and the recreation real estate business for about 9 years. He admitted in the cross-examination that other real estate appraisers have a different view from him, and that real estate values are not diminished by a transmission line.

I think it's important to note at this point that if Colstrip lines, the two 500's are not built, which could be the entry of Montana into one of the national grid pictures, there are still going to have to be more transmission lines constructed in Montana by Montana Power, as testified by Mr. Evans. There's still going to have to be a route constructed from Billings to Anaconda. We're not going to, therefore, -- or else we're not going to have any electricity servicing the consumers.

MR. DAVIS: Mr. Peterson, Mr. Graybill, since he doesn't have surrebuttal on this, makes a point to me that the final route of the centerline is still subject to approval by this Board.

MR. PETERSON: I said that yesterday, Carl, that this Board is going to examine every two miles or three miles of that route, just as they did to the Broadview-Colstrip line; as a matter of fact, it's provided for in regulations.

MR. DAVIS: Is that --

MR. GRAYBILL: Jack also knows that Mr. Zobel said that based on meteorology, they may change the centerline route.

MR. PETERSON: I'm not going to get into a debate with you, Leo, and I think you're going outside of the rules; but that doesn't surprise me.

MR. PETERSON (continuing): I would say this, that as far as meteorology is concerned on this line, we've already done one winter's study; it's been admitted by Mr. Zobel on the record, and I alluded to it yesterday, that we are going to reexamine six specific sites, four of the same ones we've already examined, to determine whether or not additional meteorology data would do one of two things: Require a change of that centerline within that two-mile corridor or beef up the design for that specific location. It's just good construction practice.

I get the impression sometimes, in listening to the arguments of the opponents, that we should have had this whole thing constructed, this plant operating, and all of these questions answered, and then you could determine whether or not that certification could have been granted. That would have been the certain way, wouldn't it?

We've got here a proposed structure; we think we've done a good engineering job on it. We know where it's going; we know what those plants are going to do, and we're asking this Board to certify that proposal. As a matter of fact, I think we're further ahead because of Colstrip unit 1 and the pilot plant than you would have in any other application when you're starting with nothing.

Mr. Graybill also made mention of the fact yesterday to Northern Plains Exhibit 25. Northern Plains Exhibit 25 is an excerpt testimony from a hearing back in New York, which is for some purpose that was never explained on the record, introduced through one of our witnesses and admitted over objection because we didn't have the opportunity to cross-examine the witness who was testifying in New York, some Doctor Becker. I don't know what his qualifications are; it's not in the record, nor do we know really the substance of how he was addressing the matter, other than it was relative to a 760 kV line in New York.

The questions were asked also of Mr. Ender, who gave testimony on behalf of C. T. Main and the applicants, as to the field affects of the transmission lines; and Mr. Ender testified at

Volume 25, page 4427, that he did agree that the safe level on the power lines had been found to be 1.5 kilovolts per meter. That translates to 0.15 kilovolts per meter.

DR. CLARK: Kili? Mili, you mean, don't you?

MR. PETERSON: Kilovolts per meter, 1.5, translates to -- yes, right.

DR. CLARK: To mili.

MR. PETERSON (continuing): Alright, here's what he said: If the proposed criteria of .15 kilovolts per meter is used as a criteria for any line in the United States, it would preclude the operation of most overhead distribution and transmission lines and even many electrical applicances in the home; and probably means we would have to eliminate the use of electricity in the home. He gave as an example the fact that an electric blanket itself has a field strength of .25 kilovolts per meter. So we disagree that that's a standard, as Mr. Graybill alluded to. It's one man's opinion, whoever that man might be.

With regard to two other matters, we discussed the difference between Rosebud and McKay coal, and Mr. Graybill spent a long time about whether or not we should use or have designed McKay coal for these plants. He alluded to the fact that it's also being marketed in another area. There is in the evidence, Exhibit 300, which was introduced by Mr. Schwinden, detailing the Department of State Lands' analysis of McKay coal problem, specifically with regard to Western Energy.

They state in that exhibit that the fact that the Peabody McKay coal is being marketed to Minnesota Power & Light cannot be used, at least by this Department, to decide that the Western

Energy McKay is also marketable because it is not clear that the two McKay coals are that similar. The iron and sodium content of the Western Energy McKay coal appears to be higher than the Peabody coal, Peabody McKay. These are both related to potential slagging problems.

In summary, the correspondence and inquires which have been made tend to confirm Western Energy's contention that Western Energy McKay coal is not fit for sale in the usual course of trade. We piloted McKay coal in the plant down in Billings, and Mr. Abrams testified that it would take a great deal more research, a great deal more time and a great deal more expense to utilize McKay coal in this type of scrubber, because the nature of the silica of that coal does not have the wetting characteristics as the Rosebud does, and therefore it presents a very difficult problem with absorption and scaling. It's a whole different fuel, in other words; and we go back to the same thing that we've been telling the Board before, that when you design one of these plants, you have to design for the specific fuel that you're going to use.

Now, the Board of Health has already found that for units 3 and 4, we have to use Rosebud coal; and I think that settles that issue.

With regard to the withdrawal from the Yellowstone River and its affects, the Board of Health findings, number 36 and 37, beginning on page 20: The affects of the withdrawal of water from the Yellowstone River for the utilization of Colstrip units 1 through 4 as proposed by the applicants, does not appear to be significant. The impact of the withdrawal of water from the Yellowstone River for utilization at Colstrip units 1 through 4 as proposed by the applicants, upon the water quality of the Yellowstone will be insignificant, and will not cause a violation of any standards applicable to the Yellowstone River. This is in accordance with the testimony given by Mr. Dunkle and Mr. Martin that this one-inch drop, or the one-foot narrowing, will not have any significant affect upon the wildlife or the fauna in the area of the Yellowstone, upon the fish.

In the Exhibit 165 that was alluded to by Mr. Graybill, there is a caveat in there relative to the so-called in-stream requirements, and that caveat specifically states, be careful because these estimates were done very quickly without the basis of any data and on the basis of just what we think. That's the gust of it. And so, when they talk about the in-stream needs for fish and wildlife, it was a quick order of magnitude approach that was done by these people who were settling the problem under a specific time restraint; and I think it was Mr. Dunkle who alluded to the fact that when you get these government people working on problems like this, they tend to overestimate what really should happen.

One other matter dealing with standards for health, it was testified to by or argued by Mr. Shenker that the two doctors who testified in this proceeding, Ayers and Hammer, specifically stated that we were going to have health problems at Colstrip. Well, I asked Doctor Hammer, in my cross-examination at page 7637 of Volume 40, whether or not -- I might as well get the exact quote -- relative to his opinion as to the margin of safety built into these unit health primary standards. And Doctor Hammer was very candid about the matter; he recognized the fact that the federal primary annual standard was 80 micrograms per cubic meter. And in considering the Montana annual standard of 52 micrograms per cubic meter, he stated (quote): "I should think that if the standard is about 50, that that certainly would be more stringent than the federal standard, and I think that based on the current information, it should protect the public health." Now remember, gentlemen, and lady, Mrs. Herak, we're still way below that 50 as far as ground level concentrations are concerned.

The standards on public welfare alluded to by Mr. Meloy about the destruction of the Cheyenne Tribe or their concern and the concern of the United States Forest Service, I think it was alluded to and answered by the United States Forest Service in Applicants' Exhibit 236. And that's a letter addressed to Doctor Tsao, from the energy planning division, under date of January 14, '75, and it states in part (quote): "Since emissions from the proposed plants will probably reach national forest lands, we feel that the plants must meet existing air quality standards as an initial step in minimizing or eliminating impacts." (Unquote.)

I think that can clearly be interpreted as being a recognition by the United States Forest Service that if we do in fact meet the standards, all of the impacts will be minimal, or, in fact, eliminated.

In conclusion, gentlemen, I have attempted to address myself to most of the environmental features covered in arguments covered by Mr. Graybill and Mr. Meloy and Mr. Shenker. It's been a long trying time for the applicants and it's been a long trying time for counsel with witnesses and so forth. But on behalf of all those people who did testify, I wish to thank you. I want to thank you on behalf, also, of our clients, the five applicants in this case.

I want to also extend my appreciation to Mr. Graybill, Mr. Shenker and Mike for the courtesies that they have extended to me during the course of the hearing. Thank you very much.

Now, Mr. Bellingham will conclude after probably a short break.

MR. DAVIS: Let's take a little break. Everybody might want to wake up. Just 10 minutes and then we'll come back.

(BRIEF RECESS: 3:04.)

Following a brief recess, the hearing reconvened at 3:13 P.M. on May 20, 1976.

MR. DAVIS: Let's proceed.

REBUTTAL

By Applicants

By Mr. William Bellingham
Attorney for Applicants

MR. BELLINGHAM: Ladies and gentlemen, I'm sure we can all breath a collective sign of relief here -- excuse me. I think we can all breath a collective sign of relief now that the end, hopefully,is in sight, as far as our arguments today is concerned at any rate. I think I will take up, hopefully, about an hour, at which time the hearing itself will be turned over to you. I have a few things to cover, however, as you might expect at this stage of the game.

First of all, I would like to discuss and go over a few things that I intended to take up the other day, but because of time constraints, I didn't get to. And I'm going over them in a hurry; we have slides prepared on them; I'm not going to bother with most of them for obvious reasons. However, I would like to call your attention to a few of the set-in factors concerning these particular points.

Exhibit 13 was previously referred to as an economic study introduced through Roger Hofacker, prepared by Montana Power, transmission versus rail, the economic impact within the state of Montana based upon three different factors: Personal income less taxes, materials and supplies was the second factor, and state tax revenues was the third. And we're comparing Colstrip through Montana to a site outside as compared with units 3 and 4.

And, as you can see, the impact to the state of Montana as a whole, with units 3 and 4 mine-mouth generation at Colstrip, 1,534,000,000; at Colstrip to Montana, 1,132,000,000; a difference of $402,000.00. Levelized annual benefits -- we went into levelized, what I meant the other day, 27,000,000 a year, in the event of Colstrip 3 and 4; and 14,200,000 at Colstrip to Montana; a difference of $12,800,000.00 a year. Other than that, I'll say no more regarding Exhibit 13.

Employment. We do have a slide on that; I'm not going to bother with it today. Exhibit 25, actually, and it's found in finding number 65, shows the annual construction of 1505 and 1979; the total expected at the peak is 1585. Sixty-five percent of the construction workers in units 1 and 2 were residents of Montana, and it's anticipated that this will be approximately the same so far as units 3 and 4 are concerned.

Permanent operation employees for 3 and 4 are 99 commending in 1980; permanent mining employment, 150, as far as 3 and 4 is concerned; total permanent employees of 3 and 4, 249 in 1982 and thereafter. That does not include the transmission workers that will also be needed.

Turning next to wages and salaries, Exhibit 26, found in finding 66, the highest figure during construction will be in 1979, $23,403,000.00 will be paid. The cumulative construction payroll for 3 and 4 will be 63 million plus; that includes the years during which the plant is being constructed. The operation, the permanent wages, will be $1,300,000.00 annually in 1980 and thereafter; mining will be over 2 million a year in 1982 and thereafter. So we will have a permanent annual payroll close to $4,000,000.00.

Tax revenues; I don't think I'll go into any figures you with on them. We have them in Exhibits 27, 30, Exhibit 223, 224 and 225. I'm going to skip those today, except I should point out to you that tax benefits are going to be significant, not only to the state of Montana as a whole through the various kinds of taxes that will be levied, but to Rosebud County as well.

As a practical matter, as far as the town down there is concerned and the school district, the units 1 and 2 are pretty well carrying more than their share; at least it's their share as the applied tax rates are concerned; more than their share when you compare them to previous years, as far as the taxes down there are concerned. A tremendous load, and that's the way it should be. And as 3 and 4 come on, that tax load is going to be increased. So the argument that there is not going to be enough tax benefits from these units to take care of the problem, I think falls on deaf ears when you analyze the amount of taxes that are going to be generated. And I think one of the beautiful things about this is that under present situations, in the event that 3 and 4 are built, 70 percent of those taxes are going to be paid by companies outside the state of Montana.

I'd like, now, to go into several points that, some of which have been brought up, and some of which have not. And there has been much discussion relative to the right of the Board to issue conditional permit; the Board of Health did. We think it's a point of law that will have to be decided later on, perhaps, but I think it's something that is rather technical in nature, and I'm certainly not going to go into it in any detail today. However, I will say this, I think the Board of Health order complies with not only the Siting Act, but the general law applicable to the authorities of administrative agencies such as this, to issue conditional type permits. And that permit, really, when you come right down to the conditions that are applied to it, for conditions subsequent, what they should do after the construction is completed, for the most part. So, we feel very strongly that there is no problem insofar as that conditional permit is concerned; and I think this Board has a right to issue a conditional permit under certain circumstances.

But there are a few things here I'd like to address myself to. There has been a lot of talk throughout the course of this hearing and before, of why doesn't this Board, perhaps, modify the application to provide for one unit, such as maybe a 420 or 330, or something to that affect, for Montana Power only. We feel that the application is based on two 700-megawatt units and there are a lot of reasons why we feel that the present application has many advantages over a smaller unit; yet we feel that because of the fact that there is no evidence relative to the implications, the impacts, and so forth, that would stem from a smaller unit, that we would be in trouble and the Board would be in trouble to issue a conditional permit of that kind, or an outright permit of that kind, for the simple reason that it is not covered by the application or any of the evidence. I think what it would amount to, it would mean that Montana Power would have to go in, as well as the applicants, if they wanted to be involved and I suspect they would not in a smaller unit, would have to go in and make a new application. And, of course, as far as the time element is concerned, it's completely hopeless at this stage of the game to take care of the energy crisis coming up in the near future.

One of the real problems with any of the lower size units, I might mention, are economies of scale; it's going to cost more per kilowatt to build a smaller unit, and also a real problem as far as transmission is concerned. The transmission system would have to be redesigned from scratch, for the most part; and just because the present transmission system which they have planned for 3 and 4 just would not fit in. So from the point of view of cost, economics, it just wouldn't work out.

Now, the question has been raised: What about one 700 unit? When I say the question has been raised, this during the course of the hearing, the cloakroom talk, and so forth. Here again, I might mention quickly, that the transmission system is designed for two 700 megawatt units; and it just wouldn't be practical to use the two 500 kV lines presently proposed on the basis of economy and everything else. It would mean that there would have to be new attention given, new plans would have to be made relative to the transmission design, entirely. Undoubtedly there would be smaller lines called for; we have a problem of getting this other energy to the other applicants, and there certainly would need to be a lot of transmission line changes made. I say other applicants, if the other applicants would be interested in such a plan.

Right now, of course, we don't know the economics of it, but we feel it would be very much costly, more so than the two units as they are now scheduled under our application; and we feel very strongly that one unit, as far as economies of scale and costs to the customer, is just a dream and perhaps nothing more at this stage.

We do have a real reserve problem. A larger unit goes out like that, where you have only one, you've got tremendous reserves; you have to build up in the case it does go out. As it is now down there with units 1 and 2, in effect what Montana Power has is two 165 megawatt units down there, one-half of each; because if one goes out, they can rely on the other; two units, in other words, basically. And with 3 and 4, as presently envisioned, the same thing; we'd have two 210 megawatt units, the equivalent of it. So we feel very strongly that the plan as presently constituted and applied for, is a good plan; it has been worked on over the years, you've seen the exhibits and so forth. We believe, in the final analysis, it will result in the lowest cost to the customers.

MR. WEEDING: Did I hear you say that in the event that somehow we selected out just one plant that then one of the proposed lines would not be an auxiliary facility then?

MR. BELLINGHAM: My understanding, as far as transmission lines in that case, that they would drop 500 kV's entirely, probably, and have to look for an alternate form of smaller lines. And, in this case, of course, we're dealing with an entirely different subject than the application here, and I think it's very questionnable. There's no evidence in the case relative to it, and I think upon the record, I think the Board would be -- might well be violating the statute under the circumstances.

MR. WEEDING: You're suggesting that there would still have to be two lines built?

MR. BELLINGHAM: No, sir; I don't know that much -- There wouldn't be two 500 kV lines. I would guess --

MR. WEEDING: Would there be two something else?

MR. BELLINGHAM: I don't know that, whether there would be two lines or one line.

MR. WEEDING: How about one single double circuit on one set of --

MR. BELLINGHAM: I'm sure of this: They have not addressed themselves to that problem, I'm sure.

DR. CLARK: In that same connection, relative to the present plans and the two parallel 500 kV's, is that for reliability of transmission?

MR. BELLINGHAM: Yes, sir.

DR. CLARK: In the sense that you're not really using both of them all the time, but you have one up your sleeve, so to speak; is that right?

MR. BELLINGHAM: That is exactly right, reliability.

DR. CLARK: Frequently, I can remember a couple of much much smaller situations we've been asked to act on, where you are putting in a reliability line, you didn't want it near the other one, because if something fell over on one line, it might damage the other one, too. You see what I'm wondering about?

MR. BELLINGHAM: I really can't answer because I have no experience in that connection.

DR. CLARK: Run these two parallel in one corridor.

MR. BELLINGHAM: I have no experience relative to the other thing at all, and so I really can't answer.

DR. CLARK: Okay.

MR. WEEDING: Would there be any reliability left if you were reduced down to one line; I mean, are there other lines that would somehow be put into overuse for a temporary repair job?

MR. BELLINGHAM: I would doubt that. And really I don't know because we haven't addressed ourselves to it, and I'm not sure that Montana Power engineers would know the answers to these things now because they haven't addressed themselves. But I do know this that they tell me that probably the 500 kV lines now planned would be reduced to smaller lines; whether it would be one or two, I assume it would be two somehow, but they'd have to integrate them into the present system. They'd use some of the present system, undoubtedly, but how much, I just don't know.

MR. BELLINGHAM (continuing): Well, it's been said sometimes that we should delay units 3 and 4 until 1 and 2 come on line, in order to determine the affects of 1 and 2. At first blush, this appears that it might have merit, but let's examine it.

One of the most salient factors in this case, I think, is the fact that during the course of the Board of Health hearing, we had experts come in from all over the country who said that 3 and 4 would never meet the standards; the same units, with the same scrubbers, as far as general design are concerned, as units 1 and 2. And so what has happened, I think it's in evidence, without any question, Jack Peterson has referred to it on several occasions; the results of unit 1, to date, have met and exceeded our expectations and then some. So I think that indicates what often happens in the course of a proceeding like this when you get experts to come in, based on a few facts that are not totally involved in the project, that will come in and jump to a conclusion with the affect of this.

So I think that particular argument relative to see what the affects will be, falls of its own weight; but we can go a step further and say that this type of an argument, delay, can be made about any plant in any time period. There's always something on the horizon that might look good, particularly if you wanted to delay a proceeding such as this. And if we consistently follow that procedure, we'd never get any plant on line. We feel there is a definite need for power from 3 and 4, and it represents the lowest cost alternative to the customers and the applicants.

We feel now, a curtailment will result in a deficiency of our resources in the future. We feel it will provide jobs; we've gone into taxes. I think Jack has talked about needed modifications if we need them on 1 and 2 could well be made upon 3 and 4 without any problem; and in the long run, any change at this time, we feel, is going to work a severe detriment to the consumers, who will have to pay for that. And we are concerned about the delay; Mr. Labrie has testified that the costs of escalation alone are about forty million dollars a year; that's over 100,000 per day. This is a real source of trouble to us.

Well, what are the alternatives if 3 and 4 are not constructed? I hate to even discuss it, to tell you the truth, but I think they'd have to do, or attempt to do, several things: One, they'd try first of all to purchase, if possible, the needed generation. Now, there may be generation down the road 12 years from now, 11 years, 10 years, but we need them within a few years; and as matters now stand, this is really not an alternative at all.

We could turn to combustion turbines. They take 3 to 4 years to put on line. The cost of fuel is involved; the question of whether we can get fuel in the future is certainly not a welcome alternative.

These are really not designed for baseloading units; they are designed for peak, and to have to run them as a baseload unit is certainly not a good situation. In the long run, it would cost a lot more.

Well, we could attempt to participate with other companies and plants in the Pacific Northwest; but, here again, we have the problem as far as other plants being available during the time frame that we're involved in here.

Another alternative would be to build a coal-fired plant for

Montana alone, but here again the time frame of 9-10 years, and even if it was reduced, we'd have problems with it.

Now, the time frame came up this morning. When we take a look at units 3 and 4, we can see that 9 to 10 years is about correct. We started thinking realistically in terms of 3 and 4 back in 1971; and it looks as though, hopefully, this is a tight schedule, believe me, because of the delays, that the first unit will come on in 1980. So we're talking about a period of 9 to 10 years right there.

I think it's too bad that you couldn't see all the witnesses. I know it was impossible, but so many times you can get something out of the witnesses by watching their demeanor, watching them on the stand, their attitude, their approach, the way they respond; and I think it's just too bad that you couldn't have seen some of the experts as they got up here and told their story. And, as in all cases of this kind, there were good ones on both sides and there were bad ones on both sides. But I do feel very strongly that the weight of the evidence in this case has been borne by us; and if you had seen these witnesses in action, I think, very much you would agree with me on that point at this time.

So many of the experts on the other side were people that were not connected with the utility business at all -- intimately acquainted with it. They were desk-bound people that took a look quickly at some studies that had been done, in general terms, spent a few days, and then came up with their conclusions. And, they're certainly entitled to their conclusions.

And we've had a parade of people through here, believe me, that have read an article, maybe two or three in some cases, have grabbed a figure or two and have paraded to the witness stand and said, we don't need 3 and 4 and the alternatives will take care of things. We've had a lot of that, and I think, as you have, or perhaps will in the future, reviewed these transcripts, you will see the difference.

Now, this unit, as a whole, has been described by somebody as a white elephant; one of the opposing attorneys. My answer to that is very simple: We have here involved five companies, good companies. Mr. Shah, who testified on behalf of the Department, was with Commonwealth Associates, indicated that the five companies, and he went around to each company and got data from them so that he could testify against us, and that's part of the game. He said they were open with it; they cooperated 100 percent with him. He had no complaints whatsoever. There's been some comments here about how utility companies don't give their data out. He certainly didn't have any problem with it.

And, Mr. Shah, when he got through, I think, reinforced our entire need problem; and I'll come to that later. But be that as it may, we have five companies here who are giants in their field; five good companies. They have spent a lot of time, they have spent millions of dollars to date, as you well know; they have spent countless manhours on 3 and 4. They've wanted to go on this from some years ago and they still want to go on it. So what we're doing, in effect, is saying, this huge white elephant down here, we have five companies here who have spent millions of dollars on it; they don't know what they're doing; they're all wrong. It's incredible to me to argue that these five companies, if there wasn't a need for this, if the approach of these type of units wasn't sound and valid, would still, as they have all along, be spending their money and time on the units. It's incredible to me to argue otherwise.

Mention was made of Mr. Morris, from one of the colleges from the Pacific coast, who came in and testified; he testified only as to the Pacific Northwest. He admitted he didn't know anything about the local resources; and yet a lot of their testimony here is based on Mr. Morris' testimony of what's going to happen in the Pacific Northwest. Mr. Morris was a real prophet of doom. He would like the world to come to a standstill. He would like to have no growth whatsoever. He would like to have us all in the dark; and I think he'd feel good about it if it happened in the future, because his prognostications would then be true.

He feels that somewhere along the line the United States has grown too rapidly and that we've got to settle back, and the way to do it is to reduce everything. And I am sure that if everybody felt that way, we wouldn't have any business at all in this country. We've experienced a recession in the past year and a half and it wasn't a very nice situation. But we do need electricity in the future; we need it to keep our businesses going; we need it for expanding population; and, as far as Montana is concerned, I don't think we can build a wall around the state.

We, as somebody pointed out yesterday, use cars, clothes, and so forth, made in other states where electricity is used in the process. We'd feel bad if we were suddenly cut off from these goods; and yet, that's exactly what the prophets of doom on the other side, I think, would like to have us do.

These prophets of doom foresee the entire eastern part of our state as a boiler room. Oh, they set up scenarios much like we've set up on the Board today, and I'll have more to say about that later. They set up scenarios based upon their own facts, their own conclusions, their own interpretation of the facts in this case; and then tell us, you let this plant go and you are going to have 10, 20, 30, 40, 50, God knows how many plants in the future. It just isn't so. Every site for every piece of generation in the future has got to go through this act on an individual basis, and I'm now talking about coal-fired generating plants in this state. So 3 and 4, I do not think, set a precedent at all, as far as the future is concerned.

There's been a lot of real emotionalism in this case; too much, perhaps, at times. But the case finally boiled down to the fact that if we meet the statutes involved by the right quantum of evidence, it's been referred to previously, the application should be granted. And we are them beseiged, I say, by prophets of doom and people from the outside who really have little or no interest in this state. They come in and tell us how the state should be run. Mr. Cogan comes in, a land planner who believes that we don't have enough statutes in the state now, we've got to have many, many more added to it; we should wait two to four years, delay, delay, delay. When they got through, they go back to their home states and this is over; they're not going to be around here to face any of the consequences if 3 and 4 is not granted. They are opposed to coal generating units; they are opposed to nuclear generating units; they are opposed to hydro units; they are opposed to everything; they are opposed to growth.

They spend a couple of days, they grab a couple of figures, and they come in and tell us what we ought to do in this state. One of them came from Washington, D. C., and said, I come here from Washington, D. C., to tell you that you should not indulge in the costs of these projects whatsoever. It's a loss of energy that you should work on, the costs are immaterial. That's his opinion; that's fine, he's entitled to it. But I think the costs are a vital factor in the entire deliberations.

Let us ask ourselves these questions: Are they involved in the future of the state of Montana? You bet they're not. Are they involved in economic conditions in the state of Montana in the future? Will they suffer? You bet they won't. Are they involved in any future power shortages? Absolutely not.

At times I'm afraid the conduct of the attorneys at the hearing, and I am not being discriminate here at all, I'm including everybody; it seems as though sometimes you wonder just what the show was going on for, whether it was run exclusively for attorneys or run by attorneys for attorneys. And, of course, that's not right; there was a lot of legal jockeying going on; and the point here is that we must grapple with the basic issues. As I said before at the other hearing, if we could somehow harness all the hot air that's been propounded by the attorneys, we wouldn't have any need for 3 and 4.

Shipping power to the southwest, I think it's been brought out on several occasions, but it's also been brought out, I think, that the excess power owned is going there, such as in the summer when there are good water conditions. We're also, in exchange, getting back power from down there when it's needed. And it's been brought out during the course of the testimony, that in 1973, when we had a severe water shortage in the Pacific Northwest and there were some real problems involved in whether we were going to have enough in the Pacific Northwest to take care of the shortages that it looked as though was going to happen. Luckily, later in the year, ample rainfall fell and bailed them out; but there were some real problems.

The sale of this excess power, and it is excess power only that's going down there, it helps keep the customers' rates low as they are selling excess and excess only.

We've heard a lot of load center arguments; how we've got to move the plant to a load center. Now, this argument has been used over the years and it's fine; and in the abstract, as witnesses said, it does apply in many cases. Here again, it's based upon the individual facts. And mention was made this morning by Mr. Shenker about moving our plant to a load center. Well, where is Montana Power's load center? I suppose Billings is the biggest one, and they didn't even consider Billings in this. The problems they had at the Corette Plant, the inversion factors down there, a lot of problems. What about Great Falls? Well, I can imagine what's going to happen in Great Falls. They've got environmental problems up there; they've got a lot of generation going on up there. What about Butte? Water problems, environmental problems there. So, when we talk about moving this to a load center, I think it's rather auspicious argument.

They did look at these sites, over 15 throughout the state; and I think their conclusion was based upon a solid foundation, when they decided finally that Colstrip was the logical place.

I'm not going into the Department's findings of fact. I'd like to. Mr. Shenker would have you believe that every time I skipped one of his findings, that must be true. And he's got carte blanche to say, well, they didn't object to this, so that, just look at it, what a great finding we've got here. Gentlemen, if we apply the same technique to our findings they objected to, I don't know, I think it was less than 10; maybe it was more than that, I don't recall exactly, but very few of them. And I'm not going to impose that logic upon you; it's ridiculous, of course.

But we spent some time analyzing their findings of fact and we answered them; and I would like to point out to you a couple of horrible examples, and spend some time. I'm not going to do it, but I would like to call your attention, for example, to Department's 99 finding that deals with figures. "Our own figures do not establish a need for additional facilities, based upon Shah's testimony." I've answered it in our answer to Department's 99.

There are many others in there. We've met them head on, and I think there must be one or two on every page, almost. I could say this: I have never in my life seen findings of fact that were submitted by the Department in this case -- I understand there was 12 and 1300 originally submitted, but boiled down to 800 and some. The findings of fact, to my way of thinking, are deplorable. They gloss over the truth, they are misleading; and that's about the nicest thing, and that's the furthest word I'm going to go. But they are extremely misleading in a good many cases; and we've pointed it out. I would say this, that any court or Board that would adopt those findings is certainly in trouble as far as reviewing courts are concerned.

There has been a lot of discussion about the power going out of Montana and how much is going to stay in. Forty percent of this power, from 3 and 4, is going to stay in Montana: 30 percent to Montana Power and 10 percent to Pacific Power for its loads in Montana, Libby-Kalispell area. The applicants also share the costs, as I mentioned before, so 70 percent of the money that goes to provide jobs and taxes is going to be paid by out-of-state corporations, as we've indicated before.

Let's turn quickly to alternatives, regarding shipping of coal versus transmission of power. I think I've gone into the load argument, center. I think it's very interesting, and I would like to call your attention -- I didn't yesterday -- I described Exhibit 22 by Gibbs & Hill, Pettibone; and, as I said at that time, there were only two exhibits prepared for evidence in this case, this exhibit and Exhibit 13 -- Exhibit 12, I believe it was, Montana Power, Mr. Hofacker's. They brought Mr. Morris from Washington, D.C., to testify; they brought Mr. Szablya, fine gentleman, from Washington, to testify. Neither of these key witnesses for them made a detailed and thorough study; rather, they addressed themselves in their testimony to energy efficiency only, and that involves energy loss along the transmission lines as compared with fuel consumed by locomotives. They left out entirely cost and economics. And even then they came to different conclusions.

Morris testified that it's far more energy efficient to locate the facilities at a load demand center and transport the coal by unit train as compared with mine-mouth generation. Szablya, who obviously spent a great deal more time upon the study, said there would be no overwhelming difference whether the two units are sited at Colstrip or in the vicinity of Spokane, relative to energy efficiency; and, therefore, the decision should be made upon more important criteria, cost and economics.

They refer to abstract subjects like Northern States Power memo, rail rates -- and this I might mention as DNR Exhibit 32. We answered it by testimony of Woodley. They were figured back in 1971 with inadequate escalation rates. Transportation of coal from Colstrip to the East is much less expensive than from Colstrip to the Northwest, and their memo, study, if you want to call it that, involved transporation to the East. It's an old one using obsolete figures and the escalation rate, as I recall, is 1.9 percent.

Federal Power Commission Study, included in the Great Northern Plains Study, rail costs were calculated at a pre-1974 rate, back some time ago; and, here, again, an abstract study that didn't involve itself in anything specific. Mention was made that Bredemeier, one of the applicant companies,had said that as far as he knew it was a standoff; but he says, a standoff as of this time, he says, railways will escalate much more rapidly their costs in the future than transmission, and, of course, you've got to go on that.

So, when it comes to the opposition's approach to this, really, I was quite surprised that it was as weak as it was. I should mention this: They did have in the Department's draft Impact Statement, a study by Melinda Schail, as I recall, who went into this, and who forgot entirely the escalation rates, our Exhibit 23 as superimposed upon that, what would happen if there were escalation rates; and I'm not going to show it to you, I don't have time, I don't think, but anyway it indicates that a much different conclusion would be reached than she had arrived at in her conclusion. And I notice that she did not testify in the course of this hearing here at all. And I think it's evident, and quite evident, the reason which she didn't testify, and why these other witnesses didn't testify relative to the economics of Colstrip, is the fact that they knew what the answer was, and that's why the Department did not bring them on.

(EXHIBIT 233 ON THE SCREEN.)

Now, Mr. Shah testified for the Department, and his analysis took the applicant's figures; he construed them differently than the applicants do, then he arrived at different figures upon which he bases certain conclusions. He, for example, applied his own figures to the operating availabilities of the plants; he assumed that the companies could and would run all their oil-fired gas turbines because of the cost of oil, even though it might not be available in the future and against the national energy policy.

As far as PGE is concerned, they've got problems with their own state regulatory agency regarding prolonged use of the units, too much noise, and other problems. And, I might say that Mr. Shah, in his testimony, said that he did not believe, and it was his opinion, anyway, that this type of a unit should be used as a baseload unit. And what we talk about when we say baseload unit is one that is run at a high load factor.

Volume 29, at page 5347, he was specifically asked: "Do you consider gas turbines as baseload units, generally?" "No, I don't." Yet, in spite of that, he went on and used the applicant's resources, all of their gas-fired turbines; and in this particular case, you'll notice here, this is our Exhibit 233, these are all requirements for 1980 and '81; and you'll notice here that at the top line, average megawatt requirements, Shah, his figures as to what the applicants could generate from turbines with this type of generation.

The next is applicant companies, what they actually would like to do and feel they can do under the circumstances; and then you have a difference. And then we applied barrels of oil that these would take, the difference between Shah's figures and our company's and the cost of oil, and we come up -- down in the lower right-hand side, and Shah testified on this in cross-examination, the figures look reasonable to him -- there was a difference of $145,698,000.00 between using Shah's figures and our figures per year. It would cost the companies that much if they went the route of the Shah approach.

And I should point out to you that their testimony indicated that if you updated the cost of oil in those figures, that the excess annually would be increased to $178 million.

Now, while we're on the subject of Mr. Shah, I might mention that I think he spent a good deal more time than anybody else did on the other side when it came to looking at loads and resources. He went around to the individual companies and got data from them and then he applied his own approach to them and came up with figures. And I want to point out a few things that have been mentioned already. He deviates from the company; he wants to use all gas turbines; he wants to crank all that in. And I think the companies think it's very erroneous, but he did make some load forecasts. And this comparison has been produced by Don Gregg here. I would like to have it reproduced and given to you, but it's not normal to do that in final argument, so I didn't feel as though, technically, I could do it. I'll put it on the board and let it go at that.

Now, this shows the comparison of load forecasts, from '75-'76 through '84-'85; and on the left-hand side we have energy; the first two columns we have Dr. Shah, Commonwealth Associates. Now this, column 1, is his forecast based upon figures that he obtained from Montana Power and applied his own reasoning to them. Number 2 is his interpretation of applicant companies' forecasts; and I want to call your attention to that. It was a maneuver that Doctor Shah, I think felt a little embarrassed about after we got through him with cross-examination; because he took his interpretation of applicant companies' forecasts and in some of his exhibits, he called them applicant company forecasts; and they absolutely are not, they are his interpretation and he's changed the figures.

The third column here in individual company forecasts from testimony in this case; and you'll see what Dr. Shah, who is their chief witness when it comes to this field, what he has looked forward to and come up with. You'll notice there, as far as Montana Power, at the top, his own forecast through these 10 years per year compounded, 4.66; his interpretation of our forecast, 5.55. Our forecast is 5.66. And you'll notice in PG&E, his forecast exceeds PG&E's forecast, and his interpretation; and so forth, down the line; I'm not going into it.

But you'll notice the composite total, his forecast, 5.96; his interpretation of our forecast, 6.17; our forecast is the same as his interpretation, 6.17; a difference of what, 21/100th of one percent difference there. Rather minor. So we can get on the board here and we can play with figures that we've made up ourselves all afternoon, and they mean absolutely nothing because they're not based upon evidence. But here we have something that's based on the evidence, Doctor Shah's own forecast of the companies in the future. That was energy referred to, peak -- I won't go into any of that on the right-hand side, but you'll notice here, 5.90 is his; the second column is 6.14, ours is 6.09. In fact, his interpretation of our forecast is even higher than ours because he's using turbines for baseload. But you can see there that the difference is what, 19/100th of 1 percent.

To me, I think this is very interesting, because this is a man that was called in by the opposition to attempt to throw cold water upon our evidence. And, as you can see, when he got through, he was most helpful, I think, to our case.

Here's a slide that has been prepared, based upon Exhibit 215, which is a picture taken of Doctor Shah's Exhibit 215 for the Department. It's not based upon -- it's the actual slide itself, or rather the actual exhibit itself. And it shows Montana Power, as he has analyzed it. He has the years over to the left, and in the first column he's got the reserve requirement; and he's got additional peaking capacity to meet Northwest power from a criteria. Now, this is not excess; this is what they are going to need in the future, according to his calculations. And you'll notice, as far as peak is concerned -- and incidentally, he thinks we're going to have big shortages in the future, which is contrary, entirely, to our own estimate, where we think that as far as the future is concerned, the Pacific Northwest is in pretty good shape.

But Doctor Shah says, no, that ain't so, from the basis of his prognostications; and, here, again, turbine, because he's using that as baseload. He sees, as far as the future is concerned, Montana Power is going to need 94 megawatts peak in '77-'78, 46 in '78-'79, and 170 in '79-'80, and down to 497 in '84-'85. And then when we turn over to the energy capacity required on the right-hand side for '79 and '80, he's got 18; and this is the first year that we have prophesied a deficiency in energy. It's not as much in his figures on the right-hand side, are not as much as our energy figures are, as calculating them are concerned; but he still has deficits. No deficits in '80 and '81; he has a 31 deficit in '81-'82 and on up to 146 deficit in '84 and '85. And there you are, ladies and gentlemen, one of their key witnesses.

He testified in Volume 29, at 5064, "It is obvious that Montana Power lacks peak resources to meet their peak load demands from '77-'78 to '84-'85; hence, Montana Power needs additional peaking capacity as given in Exhibit 215, Column C." (That's the middle one.)

Turning to energy, it is also obvious from Exhibit 213 that Montana Power has enough energy resources to meet their average load demand up to '78-'79; however, our analysis shows that they need additional average energy resources in '79-'80 and from '81-'82 to '84-'85 as given in Column D. That's his testimony.

I'm going to quickly go into a few more subjects. As for as the Northern Cheyenne is concerned, I'm not going to spend any time on them at all, except to comment very briefly that in 1970 a meeting was had in Hardin where some of their people invited Montana Power representatives to come down and meet with them, for one reason (Cheyenne and Crow Indians were represented there): In order to get them to build generation plants upon the Reservation. They weren't built there, and so today we have the Northern Cheyenne coming in and telling us that we're destroying their civilization.

Bechtel figures, and incidentally, it's kind of interesting to note that the Bechtel construction manager down there is part Indian, himself, is married to a full-blood; he has, as he's testified himself, he has attempted to do everything he could to provide jobs for the Northern Cheyenne, to train them and to help them out down there. They say, oh, they haven't hired enough Northern Cheyenne to make it worthwhile. Well, it's interesting to note in the spring of '75, which was the highest peak of employment, 70 Indians out of approximately a thousand, a few more than a thousand, that worked for Bechtel at that time, were Indians; 35 to 40 were Cheyenne.

I think it's interesting to note, he was cross-examined at great length as to what qualifications they had to have to work on the job; and he said something, and I think it came out of the blue sky, and I think it was so typical. He said, well, he said, one qualification you have to have to stay on the job down there is desire, desire to work, of course. Certainly not all the Indians of the Northern Cheyenne who have testified here are against the units. We've had workers come in and testify in favor of them; we've had a man who was on the tribal council of the Cheyenne, representing a thousand parties or so; the Rosebud Society has come in in favor of 3 and 4 for a variety of reasons.

They would like to have a separate study of everything that was done down there to apply to the Reservation. Well, there was no separate study done for any other specific area, some of whom are closer than the Cheyenne Reservation. And it's interesting to note that the testimony is that the Reservation is in the confines of the radius study.

Now, very briefly I want to go into site studies of the applicable sites in the state of Montana, because much testimony, or much comment was made, I should say, regarding that, during the last day or two. And, Bob Labrie testified generally on that subject at Volume 13 of the transcript, page 2080 to 2084,he goes into it, and at Volume 45, 9092, he goes into it. Exhibits 267, 267-A and 267-B are typical of what they did in many cases, where they'd make computer studies of those applicable sites. They put -- and we put these exhibits in; we didn't log in all the crates and crates of them that were done, but to show a typical example. And they did, they made a detailed study on these sites, and to say they didn't consider the environmental factors is absolutely wrong. They did, and his testimony indicates that, if you will read it, and I expect you have. As I pointed out the other day on the board from the slide that we had on there, that the various studies indicated, they weren't in writing, but their studies indicated and they testified that they'd gone to these various places and looked over the environmental factors, and there were certain reasons why they couldn't locate in these places; and a good many of them were environmental.

Why 3 and 4 built at Colstrip? I think Labrie answered that, Volume 13, 2094, he said: "I have previously discussed how and why Montana Power made the decision to select the Colstrip site for units 1 and 2. Once this site was selected and money was spent to develop it, the Colstrip site also became the logical place for the construction of units 3 and 4. This decision was based upon the same reasons why the Colstrip area was selected for units 1 and 2 as well as the additional factor of the site having already been developed as a result of units 1 and 2." So they took into consideration the previous studies that they had done and came up with the analysis of the various sites, brought them up to date, and decided to build down at Colstrip, units 3 and 4, if possible.

And I think it's logical; there's nothing wrong with that approach at all. They didn't prepare a bunch of separate studies; there was no need to. They already had them. And he also testified later that the Colstrip site was selected for units 3 and 4 for various reasons, among which that 40 percent of the power was to be used in Montana and there was already an existing mine-mouth site for them. And specific studies indicated that this was the most economical location, Exhibit 16 and 17.

The implication has been made that Colstrip was picked because Western Energy wanted to sell coal down there; I think that's ridiculous on its face. Remember we have partners in this; I'm speaking of Montana Power having four partners. They have Puget in 1 and 2 and four in 3 and 4; and certainly with those people looking over their shoulders, they're not going to be able to charge them an advanced price for any coal that they may sell them from Colstrip.

The question has been asked, if Colstrip is so good, why are the companies wanting to sell the property down there? They're damned if they do and they're damned if they don't. They're not in the business of this; they're in the utility business. They got in there in the first place because they wanted to; they felt they had to in order to get the town started correctly so that it would not become a Gillette, Wyoming, and a Four Corner area and some of the others. And I think they got it started right; and now that it's headed in the right direction, they want to get rid of it and turn it back to the private sector where, in the final analysis, it belongs. They are accused, now, of having a problem.

And, incidentally, I might say, because it was brought up yesterday and I realize it's not in evidence; but in view of some of the other assertions made, I don't feel too constricted in this regard. A swimming pool was started within the last few days. Western Energy is going to pay a half of that.

MR. SHENKER: But it seeps.

MR. BELLINGHAM: Have you been down there; have you, Mr. Shenker?

MR. SHENKER: (Inaudible.)

MR. BELLINGHAM: There must have been some kind of an environmental study made on it somewhere, perhaps you have one.

MR. BELLINGHAM (continuing): A grocery store is under construction by a private individual; a gas station and garage is under construction now, and they are negotiating for a bowling alley and movie theatre. They would like to get out of there, and the reasons are obvious: They are in the utility business.

I would like to say a few words on the Department's role in 3 and 4. Russell Cox came up with it yesterday to a certain extent. He questioned the role of the Department. He seemed to think that they make a conclusion in the beginning and then work backwards. Now, I'm not going to go into detail on it. The Siting Act does provide various things, and I wonder if he wasn't right when he said it envisioned an objective analysis. And when you have young, zealous men in the Department working on 3 and 4 before they ever come up with their final recommendations, carrying briefcases around with "Stop Colstrip 3 and 4" on them, you wonder, did the Act envision this? And when you have public hearings and you have young men who are working for the Department applauding in the audience every time somebody gets up and assails Colstrip 3 and 4, you wonder, did the Act envision this? I think not, and I think the Department's role in this entire affair is a rather discredit to the Department and to the citizens of this state.

They say that rates will go up. Yes, rates are going to go up. Our finding 45, I think, takes care of it. They will go up if 3 and 4 are built; but the question is, what happens if the alternatives are used to replace Montana Power's share in 3 and 4, if there is one? And the testimony is, as indicated in our finding 45, that the alternatives are more expensive and the rates will go up more if the alternatives are used, and accordingly will be passed on to the customers.

A couple of things I would like to go over, as far as Mr. Shenker's testimony is concerned; we'll get through his scenario and then we'll call it a day. (I'm sure you'll breath a sign of relief at that.) He said that cooperative representatives were told and insisted, testified by Montana Power Company; the state of the record is, that is not correct, at all. There's a lot of cross-examination that dealt with that, and they absolutely denied it. Mention was given this morning, in the Seattle area about a Seattle light company going to use Colstrip coal somewhere in 1982 or so for a generating unit. What a surprise that is to Montana Power and Western Energy; they had no knowledge at all what happened, actually; and, here again, there's nothing in the evidence found at all. We checked it out and found out they're talking about a scenario in the late 1980's, they set up several alternatives, and this happens to be one of the plans. They are looking at them and that's all. I think we have a statement here, built in 1982.

Vilification and arrogance have been attributed to the applicants. It's too bad you couldn't have been here to see Larry Faith testify right before noon one day. When Mr. Scheuneman and Mr. Shenker assailed him, relieved him of his billfold, tried to relieve him of his self-respect, and, in fact, acted like a couple of vultures. I haven't seen anything like it, and I've been in the courtroom before, let me assure you.

Conservation, 5 percent every year. Now, let's look at it. He mentioned that he grabbed the figures out of the air. He said, Pacific Power, 13, say; Portland, 9 percent, say; and so forth. There's no evidence into that in the evidence at all concerning that; and the most striking evidence in the record is Bernie Goldhammer's. And he said, as far as the conservation effort is concerned, back in 1973, that was the year where they had a real problem in the Pacific Northwest, a real water shortage, a real power shortage where people were receptive to conservation pleas; they thought they saved around 5 percent and the next year it went down to 2 percent. And some of them have said, well, those are maybe too high because there was a recession at that time. And he talks about going overseas and looking at the situation in other countries where they've tried to conserve. The interesting thing is, you save 5 percent every year and finally you just run out entirely; just run out to the end, there will be no loads at all. So it's impractical. He said it was a one shot deal, as far as he was concerned. Yes, we would like to have conservation, and every day I drive back and forth and have my radio on, I hear pleas for conservation in the state of Montana, just like they're doing in other states in the Pacific Northwest. But, unfortunately, people, unless the crunch is on them, just do not respond to things like that.

So, when we say 5 percent every year down the road, when you look at Goldhammer's testimony, it just isn't in the offing. And it certainly will not eliminate the need for 3 and 4, and the testimony is replete with that.

Mr. Shenker challenged me this morning and I'm going to accept that challenge. That's the word he used, I challenge you to find in the record any reference to it; and I'm going to answer it. The question was, and I think he was talking about one of our findings, that all reasonably expected problems have been identified and corrected during the construction period of 1 and 2; our Finding 63.

MR. SHENKER: No, sir, it was with respect to 3 and 4, not 1 and 2.

MR. BELLINGHAM (continuing): And I would like to call your attention now to Harold Biesel's testimony. (Can I get 19, Volume 19; I thought I had it here.) Finding 63, indicates here, it's one of those dealing with socioeconomics: All reasonable and expected problems have been corrected during the construction period of 1 and 2. And the reason that was put in there was because the adverse socioeconomic impact to be caused by construction of 3 and 4 will be minimal; and that was one of the reasons. And Harold Biesel specifically testified regarding that. He said, in fact, impact will probably be less experienced during the construction of 1 and 2 since civic leaders, public officials and citizens already know what to expect during the construction of units 3 and 4; thus, no new difficulties are likely to occur because all reasonably expected problems have been identified and corrected during the previous construction period. And there it is, in his own testimony.

I think Mr. Shenker also made reference to coal, and he talked about some 32 megawatts growth in the future. I don't know where he got the figure, he may have based it upon a 1.5 percent growth rate that somebody testified from the coop, who was talking about all forms of energy, all gas, electricity, everything else, coal, and so forth, in the entire United States. And yet, Follensbee, who represented here approximately 15 coops in Montana G & T coop, indicated that they are going to need 150 megawatts by 1985, all from Montana Power. So, when we talk about need for 32 megawatts in the next 10 years, that just isn't correct. The coops themselves are talking in terms of 10 percent load growths, and figures of that magnitude.

Now, let's take a quick look at these scenarios. We couldn't check the arithmetic, didn't have time, obvious. The first scenario was one percent, or 3 percent rather, which is low by all standards;

and when we say all standards, I'm talking about the evidence in this case. Now, their finding 65, at page 11, and that would be my answer to their comments, goes into Brewer and Anderson. That's correct; it's my answers, our answers, to their proposed findings of fact. It starts at page 10 and it goes into what happened to Brewer's superficial approach to power loads in the future in the Pacific Northwest. Now, Anderson indicated that he was much, much, too low. And Brewer is one of our prophets of doom, of course. And I'm not going to go into it, but I call your attention to that finding, at the bottom of page 10, and on page 11 indicate what Anderson said about Brewer's approach. Anderson indicating himself that growth rate could well be in the future for the five companies, 6.6 percent to 7.5 percent to 1980 and 3.9 to 5.4 percent for '80 to '90. So I think the future of 3 percent is much too low, particularly also if you look at Exhibit 240-G of ours, applicants' exhibit, which shows the nationwide energy loads as prophesided by some 10 companies; and every one of them, with the exception of 2, as I recall, were over 6 percent as far as the next 10 years is concerned. That exhibit is 240-G.

And, I think, as far as this particular scenario is concerned, he included in there turbines for PG&E, just as Shah did on some of them; he excluded sales for resale, and we don't think that's right. That's a long-term contract, and if you exclude sales for resale on the Montana Power load, what are you doing? You're excluding sales that they made to coops for resale to their customers. You exclude sales for resale to the Flathead Indian coop up there, and like things. Now, we don't think that should be done; and it says upon the scenario that this is the applicants' figures, and it isn't; it's applicants' figures changed by Mr. Shenker, is what it amounts to.

Now, we have a scenario and it's based upon facts in this evidence. I didn't get up here on the board and prepare a fancy board and tell you that this is our scenario, and then proceed to bring up a lot of figures that I, myself, have extracted and played with in order to come up with an obvious conclusion; and then put them on the board and say, this is our scenario. I'm like Joe; I didn't understand most of what he was talking about this morning, it was utterly incomprehensible. And I might say, one of our people put a calculator to it during the noon hour and this was his response: These are figures not based upon evidence at all. They're figures that have been extracted and have been played with and tossed around by Mr. Shenker, and then he calls it his scenario. We have a scenario, and our scenario is our proposed findings of fact; and as far as need is concerned, our findings 1 through 58, and they're all in there, the figures and the testimony.

This is based upon testimony, our findings are. They are not our interpretation; they are not what we've done after we've taken the fact and played with it. They are the actual facts that were testified to in this case.

I'd like specifically to call your attention to findings 13 and 29 through 32, which indicate what growth rates our companies put there; and you'll recall the companies have made changes downward in the last year or so, for obvious reasons. And finding 13, Montana Power's prognostication is 5.6 percent for the next 10 years; and at 29 through 32 you'll find the other companies. For example, 29, Puget Power, 6.1 percent per year over the next 10 years; Washington Water Power, 4.3; Portland General, 7.07; Pacific load, 6 percent, I believe it is -- 6.2 percent, I believe. And so we go on. I might mention this, Pacific Power in the Montana area forecasts an average load growth of over 6 percent for the next 10 years, based upon the past. In fact, I think the testimony was that he was going to have to perhaps take another look at that in view of what's happened in the last few months in Montana, insofar as the Pacific load is concerned.

Scenario number 2. Once again, the numbers are his. Our figures, based upon the evidence, and our exhibits in this case, shows a 5.6 percent, as I just indicated, growth, and the figures are entirely different. So when he says these are applicants' own figures, don't be misled by that; it's his interpretation of our own figures.

Number 3, he uses their Exhibit 48, which starts with several hypotheses; and then upon 3 hypotheses, you dump 2 more hypotheses. Somehow, maybe that comes out the truth; I don't know. But when you add 3 or 4 or 5 hypotheses, I think you come up with just what it sounds like.

Number 4, he says applicants' exhibits here and yet he's dealing with two complete differences. He used the resource figure from one exhibit, which was high, in his favor, of course; and new loads, in another exhibit, which were lower, in his favor; so that it would appear that there would be less of a deficit. The two are not consistent at all.

And in number 5 he revised the base and reduced it by 3.1 percent because the West Group did that. Those figures have been changed within the last year, and they are taking into consideration already that 3.1 percent figure, so what he's done is reduced it again by 3.1 percent.

Well, we've got great news, and I think the Montana Power people should get on the telephone and telephone utility companies in other areas of the country and say, we've got more energy up here in the future than we know what to do with; come on and we'll sit down and let's start the haggling. Now, obviously, they're not going to do it. But you look at his figures and look at the excess that he projects in the future, based upon a scenario produced, directed and acted by one person, believe me. Great news; there's only one thing about it, we can't take advantage of it.

MHD in 1982? Utterly ridiculous; 1988 is the closest possible date, and that is even slipping.

One question was asked this morning relative to MDU, why we didn't get together with MDU in the field of planning regionally, for the most part. I should point out that we belong to one region, the western region of the United States -- when I say we, the 5 applicants and this company. There are 9 regions in the United States, MDU belongs to another. The regions are not based upon state lines; they are based upon territorial and the natural accumulation over the years. And, as a result, MDU is in another district entirely. Their interest is Eastern Montana and Dakota; and, as a result of that, they're involved in regional planning with other utility companies in the Dakotas, south and to the east of that area. Now, that doesn't mean that they communicate with each other; they do with MDU; they share data with them. But as far as actually getting together in regional planning, I think Mr.

Hofacker put his finger on that someplace during his testimony when he said that the reason is that they need transmission to the east from Montana Power service area into MDU's service area before they can get together on any real legitimate regional planning efforts. And that transmission is going to cost an awful lot. And I asked the question, who was going to pay for it? I don't know. Obviously, it hasn't been done to date. But until they get a lot more transmission to the east, the regional planning in this field obviously is not going to take place, because what good does it do to plan and then not be able to transmit energy back and forth. And that, basically, Doctor Clark, is the reason why MDU has not been involved.

I might go back to the beginning of 3 and 4, when our 5 applicants got together. They had problems in the future as far as energy deficiency was concerned, so it was natural for them to get together. They all belonged in the same planning group; the network between here and the Pacific Northwest is good, and for that reason, they sat down and planned 3 and 4. I think Goldhammer's testimony is perhaps the best in that regard as far as coming down to regional planning.

And so, with that, I'll leave you for the day. I think in view of Doctor Clark's comments in the hall, I want to extend a very profuse thanks to the Board here. He laughed about how lawyers congratulated themselves and them overlooked the Board. I'm not going to congratulate any lawyers; I don't expect any congratulations in return, but I do congratulate the Board for their interest. And I'm sure that when you leave this room, you'll carry with you the same sense of fair play that has been indicated throughout, and I'm sure that you're going to look at the facts, the evidence in this case, and the applicable law, and come up to a decision that is going to be beneficial to the entire state of Montana and the people.

I'm not going to tell you what you're charged with; you know, you're a smart Board; and I'll leave it at that. Thank you very much.

MR. WEEDING: Bill, a couple of questions. Could you state categorically whether or not those applicants would accept half load? If they would accept a 700 or if they would say, no thanks?

MR. BELLINGHAM: Well, it's hard for me to speak for the applicants, I'll tell you that. I'm not in a position to stick my neck out in that regard, but I can say this: As I told you here earlier today, I think it's a pretty good indication of how they feel, that first of all, I don't think that one 700 unit with new transmission problems and lines different from what we have now; I don't think you can do it under the statutes, for one thing. And secondly, there's a lot of problems as far as participation is concerned, as far as reserves is concerned, and I am not going to stand up here and categorically say, no, they wouldn't; but I think that's a pretty good indication of how they feel about it.

MR. WEEDING: Okay. Just a slightly different twist to it then: How do you think they would respond to a certification of one plant now and a second one three years down the road, conditioned upon regional planning and maybe an affirmation of projections?

MR. BELLINGHAM: Well, there are a lot of problems. I've given you a few of them, and I'm sure the engineers could talk all day on that. But the problems, of course, are unbelievable. There are contract problems down the line, escalation of costs; and that is a tremendously expensive proposition if that is done. And we feel that our loads are going to be able to handle these two units without any question. And, in fact, we have indicated to you that Montana Power, with 3 and 4 in '76 and '77, is going to have to -- or '86 and '87 -- is going to have to start looking around for new generation. I think it creates some real problems.

MR. DAVIS: Any other questions?

DR. CLARK: Yes, I have just one. Bill, I think one of the big problems which everybody, applicants, opponents, Board, is facing in this is that this is specimen case number one in the sense that we're finding out deficiencies with the laws, with the load, also other things; and I know that the applicants have been criticized for not doing this and not doing that, but we all have 20-20 hindsite. One thing I'm wondering about, in your view, looking at the law, to what extent in the findings of fact and conclusions of law that the Board might come up with can we say things that would tend to determine the way in future applications were handled? We can see a lot of problems with what happened now just simply because of the time frame and the fact that we're all playing the ballgame for the first time, and I don't think anybody can truly be faulted on that. Do you see what I'm driving at?

MR. BELLINGHAM: I think I do. The problem here, of course, that --

DR. CLARK: You see, what we need is really two things: One, a decision on this; and secondly, a philosophical backing on what to do in the future.

MR. BELLINGHAM: Well, the real problem with that is that you water down your decision with what might happen in the future and it does create a problem. It seems logical to me to hand down the decision that you want to hand down and then pass a resolution of intent among the Board that has nothing to do with your decision as such, but in an open meeting, a resolution on intent as to how you perceive the thing should be handled in the future along the lines that you've talked about. It seems logical to me that that would be the answer; and I'm afraid if you start putting things in your findings and everything as to what should happen in the future, and this sort of thing, you're getting into a field of unknown there. I think there's some problems there, and I'm sure you do or you wouldn't have asked it.

DR. CLARK: Well, yes; but I think it's a thing that we have to face, though. But I think we have a broader issue than just yes or no, or yes maybe, on 3 and 4.

MR. BELLINGHAM: Wouldn't resolutions handle the case, resolutions of intent?

DR. CLARK: They probably could, I didn't think of that approach; but I think that this is one of the things that we're really faced with, because we've got to not only make a decision on 3 and 4 one way or another or a yes condition or whatever it might be; but I think we're obliged, since this is ballgame number one, to say alright, let's avoid some of the following 1, 2, 3, 4, 5 problems in future similar cases.

MR. BELLINGHAM: Dr. Clark, you like to borrow trouble, don't you? (Laughter.) Seriously --

DR. CLARK: That's an obligation of our Board.

MR. BELLINGHAM: I realize and I know how seriously you do take your obligations. It seems to me that the logical answer to that is like I said, resolutions.

DR. CLARK: Separate them out?

MR. BELLINGHAM: Yes. But I'd really question whether it has any place in the findings.

DR. CLARK: You'll be pleased to know that Mr. Davis' suggestion or advice was the same thing.

MR. BELLINGHAM: I agree with him for once, anyway.

DR. CLARK: Thank you, Bill.

MR. DAVIS: This will conclude the hearing on Colstrip 3 and 4, and the matter will be deemed submitted to the Board for their determination. Farewell.

(Concluded: 4:35 P.M.)

CERTIFICATE

I, Gwen Blacker, hereby certify that I am the reporter who took the before transcribed proceedings, pages 10,001 through 10,332, and that this transcript represents a true and accurate record thereof, to the best of my abilities.

Dated this 2 day of June, 1976.

Gwen Blacker
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